



FRIDAY, MARCH 7.

Contributions.

Design for Water Crane.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The accompanying design for a water crane was suggested partly by an old crane on the New York & New England Railroad while connected with that road. The crane turns, as indicated, on a ball joint in the valve pit, and is held upright by a wooden frame made no wider than the pipe flanges, so that the distance between centres of tracks may be a minimum. The bearing of the crane in the frame is a hole cut to fit the pipe in the running board on top of the posts, this running board being set level with the tank collars of the locomotives. The valve pit is made as small as possible, both for economy and to avoid disturbing the track during its construction. I have shown the valve half open in order

detail—is to allow for swinging the crane back in a hurry, since the latch collar will inevitably be torn loose if the crane in full swing is brought up by the latch, and it is not necessary for the latch to hold the swing back crane absolutely parallel with the track.

The ball joint swivel is very advantageous from its simplicity, its good order (as it tends to grind itself to a more accurate fit), and its freedom from derangement by frost or settling, as the pipe does not need to remain plumb.

On the wooden frame of this crane an electric circuit can be readily arranged to ring a bell at the nearest station when either the crane is not swung to latch back, or when the valve is not down or unlatched.

These cranes have been used on the New York & New England Railroad and the Chicago, Burlington & Quincy Railroad, and, so far as I have heard, have given entire satisfaction, except in one case where the crane was not properly set up and drained.

W. HOWARD WHITE,

DRESDEN, Germany, Jan. 5, 1884.

The Adoption of a Standard Freight Car.

The usual monthly meeting of the Master Car-Builders' Club was held in New York on Feb. 21. The subject for discussion was: "The adoption of a standard freight car

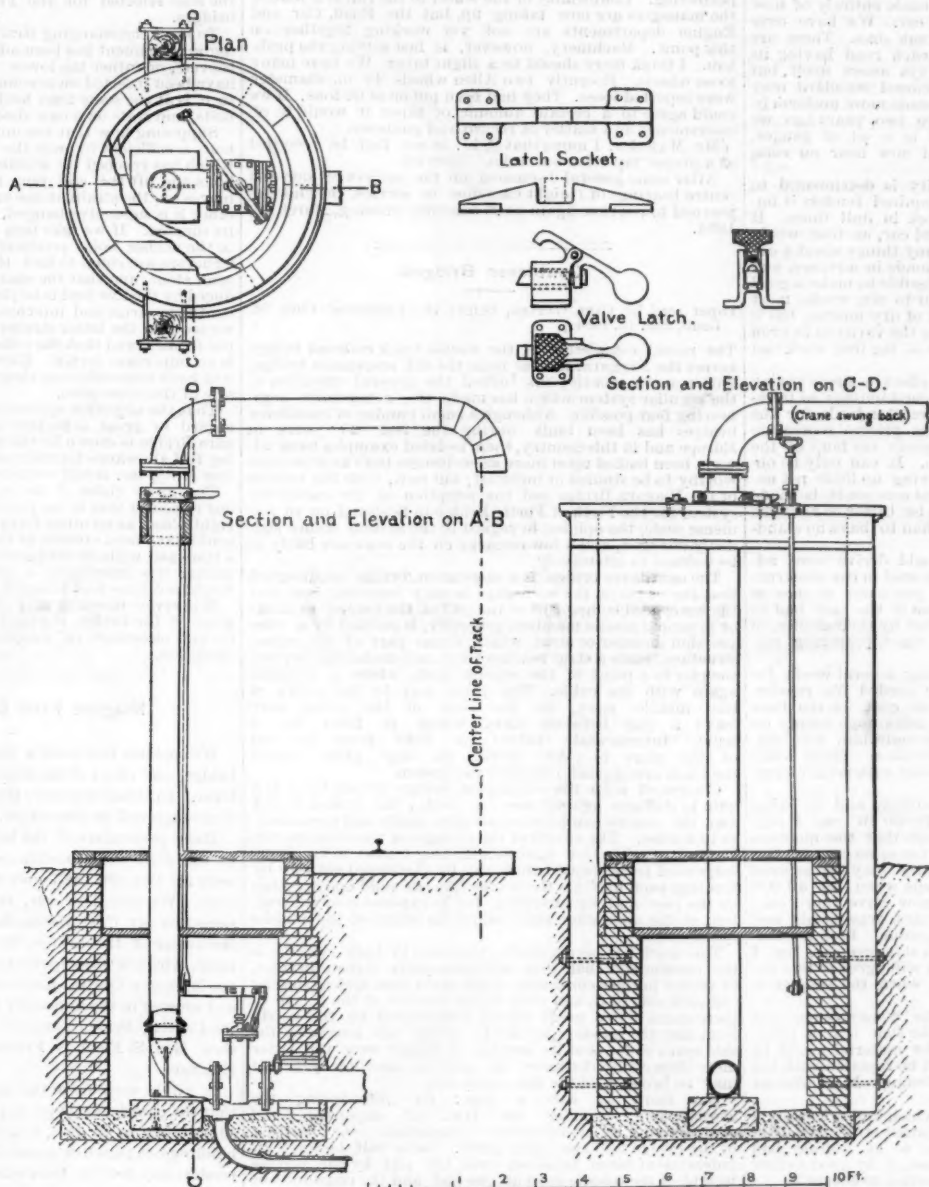
inconvenience and expense, which it is our province to remedy and correct.

Poor's Manual states that there are in the United States 22,029 passenger cars and 781,185 freight and coal cars, held and owned by railroads and transportation companies.

There can be no accurate data of the innumerable and multiplied differences of sizes and forms comprised in this equipment. Heavy expense and great delays are caused by the varieties of duplicates required.

The first step in adopting a standard is to determine what that standard shall be, giving due concession to extremes while departing little from average practice. The advance to the standard car axle was then up to the highest requirements, yet to-day greater sizes are advocated as compensating for loss of uniformity by increased carrying capacity. The adoption of this standard has been one of our most important problems, and is yet far from a satisfactory solution. Want of uniformity of rails, track gauge, frogs and guard rails embarrasses our efforts and creates difficulties in compromising a wheel gauge that should meet the differences in track gauge. Great advances have, however, been made, and our efforts have relieved many difficulties, and simplified car repairs, and greatly reduced expenses.

The size of bolts, form, shape and number of threads, a few years ago, was one of the most annoying problems in car repairs; scarcely any two railroads' or manufacturers' threads would interchange, and often different shops on the same road were in like condition. We all know what innumerable annoyances and serious neglects are caused by this, yet how long we waited for the remedy! A satisfactory standard is now adopted, but should be more closely adhered to. The standard axle is an important step in ad-



DESIGN FOR A WATER CRANE.

to show the extreme space occupied in plan by the valve and other attachments.

Instead of the Peet valve shown, Mr. Collin's very excellent valve recently illustrated by you might be used, but in place of Mr. Collin's combination of levers, an additional latch or modification of mine would be needed to hold the valve up while the fireman was watching the water in the tank. My valve-latch is operated by the fireman's foot. Its use is to prevent improper opening of the valve by unauthorized persons. The draining of the crane is effected by a half-inch hole in front of the valve kept open constantly—at least in winter—the amount lost from an 9-in. pipe while watering an engine being insignificant, and the simplicity obtained important. The crane nose should be carried to the end at least 8 in. in diameter. A low velocity and large delivery are what is wanted. With heads of more than 40 ft., the supply pipe to the valve may be reduced to 7 in. and less, as the head increases, since the velocity will then be too great with a full gate to be utilized in taking water. The play of the "spring latch" in its socket—shown on the

for the different classes." A paper by Mr. Hildrup, of the Harrisburgh Car Works, was, in the author's absence, read by the Secretary. We subjoin an abstract of the paper and of the discussion which followed:

PAPER BY MR. HILDRUP.

The subject of uniformity in railroad equipment is one on which there is much to be said on both sides of the argument. Had inventive genius and improvement stopped at the first railroad and its equipments, we can now see by the great advances since made how much would have been lost to our country's development, and no doubt the question of uniformity of equipment had at that time its advocates. The inventive genius of our country, and the inventive force and energy of our craft cannot be suppressed. Individuality will assert itself, refusing to be bound by any rules or restrictions. Advancement and progress are secured, and to it our country owes much of its wealth, comfort and national grandeur. From the economic business standpoint in railroad management they who carry two tons where one was carried at the same cost add efficiency to the system. Individual effort has effected constant improvements, so that while the general features have been mainly alike, great differences in form, shape, sizes and proportions, have prevailed, leading to great

vance, but its full benefits are not felt for want of care and accuracy in following its exact dimensions. There are many imitations of this standard causing great inconvenience.

An ordinary first-class box car has—
7 different sizes of bolts,
75 different pieces of forgings,
36 different pieces of castings,
besides the other constituents of a car.

A few years ago the following discrepancies existed in bolts nominally of one size. The diameter varied several numbers, requiring from six to eight different sizes of nuts; the number of threads to the inch varied; and lastly, there was a great variety in the depth and shape of threads. No less than 50 variations were required probably to fit the various $\frac{1}{2}$ -in. bolts. The cost of different and special sizes of taps and nuts, the large assortment required, the numerous delays caused by selecting or making nuts, and the risks run by misfits were some of the evils remedied by the adoption of one uniform size of bolt and nut, in diameter, size and form of thread, with a fixed number of threads to the inch. The remedy is so obvious that the wonder is why it was so long neglected. This illustration shows the importance of uniform standards.

Wheels vary in diameter, and, as they should be of equal size on the same axle, must be mated. Axles, journals, oil boxes, and bearings also exist in great variety, and form

many thousand different combinations. Special provision must be made at the shops to meet these numerous individual requirements, resulting in a large outlay for supplies, constant changes required for multiplicity of detail work, and large storage room. Great delays and loss result from detention of cars, often at remote stations, where a perishable load has to be transferred. The temptation to let improper work go out is perhaps one of the most serious of its attendant difficulties. A uniform standard reduces the cost of supplies, makes needed changes quick and inexpensive, facilitates repairs, permits a more nearly constant use of cars and secures greater efficiency with less cost of equipment, and lower percentage for repairs. Manufacturers would reduce the cost of articles, as when made on a large scale, there would be an economy in outlay for plant. The same dies, formers and molds can make uniform duplicates continuously, while differing duplicates require the outlay of additional sets of patterns, etc. A manufacturer can afford to keep standard articles in stock, and consequently supply them without the delay required to make a special pattern.

When the importance of standards is more fully understood their adoption will be found easy, but it is imperative that any standard agreed on should be accurately followed.

DISCUSSION.

The PRESIDENT, Mr. Leander Garey, called upon Mr. Wilson, of Wilson, Walker & Co., Pittsburgh, to open the discussion.

Mr. WILSON: There are such great discrepancies, especially in axles, that we cannot make a large stock in advance. We expect the introduction of a larger axle to carry the heavier loads, but Mr. T. N. Ely informs me that the axle now used on the Pennsylvania, being made entirely of new material, would carry a 30 or 40-ton car. We have over 1,000 axles in stock, of many different sizes. There are several hundred different draw-bars, each road having its own pattern. Individuality will always assert itself, but by a system of mutual concession a general standard may ultimately be adopted. Iron is now made more uniform in size. After attending a meeting here two years ago we adopted steel rolls, and are working to a set of gauges, especially for bolt and rivet iron, and now hear no complaints as to iron being oval.

Mr. LEIGHTON: Want of uniformity is detrimental to car-builders. The variety of styles required renders it impossible to make passenger cars for stock in dull times. It is impossible to have a strictly standard car, as that would shut out all improvement, but if many things about a car were standard they would be partly made in advance, and better work turned out; as it is impossible to make a good job in the time allowed, often only four to six weeks, most manufacturers have now a large stock of dry lumber, but it shrinks after being worked. Owing to the varieties in even what is called the M. C. B. truck, none of the iron work can be made ahead.

Mr. C. A. SMITH: Railroads could effect a great saving in repairs, and prevent many misunderstandings as to receiving or rejecting cars, if there were standards for the parts of the different classes. I fear the present generation will not see a uniform car, and this is more the fault of the master car-builders than the railroads. It can only be obtained by mutual concessions, and giving up little pet notions. Good uniform box, flat and coal cars could be made with very little alterations. It would be better to have the poorest car running for a standard than to have no standard at all.

The PRESIDENT: Manufacturers would derive some advantages if uniform material would be used in car construction, as they could then deliver to the purchaser at once on receipt of order at 20 per cent. less than if the cars had to be made. This saving would be effected by their ability to keep their works going during slack times, preparing materials for a future demand.

A car at Buffalo has now been waiting several weeks for the exact quality and size of timber needed for repairs. Cars are held out of service 10 to 20 per cent. of the time that they could be employed to best advantage simply on account of a want of uniformity in the materials, forgings, bolts, etc., which are required to repair them. Many roads are using the standard length of draw-bar without conforming to the other dimensions.

Mr. LENTZ: This is an important subject, and to bring about uniformity in the proposed 60,000 lb. car I suggested to our General Superintendent that the question should be considered by a committee, for as no cars of this capacity have yet been built uniformity may be secured by prompt action. If this had been done when the 40,000 lb. car was first talked of we should now have more cars of the same build. Brake shoes, oil boxes, draw-heads and many other parts should be interchangeable. I see no reason why we should not have a uniform standard car, but I doubt whether the master car-builders will agree to this unless action is taken by higher officials when the subject is properly brought before them.

Mr. C. A. SMITH: The design—the construction—and especially the castings, everything like that that is interchangeable, should be uniform, but the material might be different. Our rules say that cars shall be repaired with the same material and the same general design. It is sufficient if the material is equally good.

Mr. LENTZ: I would accept a car which had originally a yellow pine side sill, and had been repaired with white oak.

Mr. C. A. SMITH: The car referred to at Buffalo had originally oak sills, and had been repaired by good yellow pine of the same size, but the owners refuse to accept it.

The PRESIDENT: I referred rather to the sizes than to the kind of material. There have been instances lately where roads have declined to receive cars where wrought iron has been substituted for cast iron in the repairs to save delay, instead of holding the cars while the patterns could be made. This shows the advantages that would be derived from uniformity not only in sizes but in material.

The meeting then adjourned.

Straight vs. Taper Wheel Fits.

The usual monthly meeting of the New England Railroad Club was held at Boston, Feb. 27, the President, Mr. F. D. Adams, in the chair. In the absence of the regular Secretary, Mr. Daniel M. Brady was, on motion, chosen Secretary *pro tem*. The subject for discussion was, "Which is the best and safest way of turning a wheel fit, straight or tapering?"

Mr. LAUDER (Old Colony) did not believe a straight fit was desirable; a slight taper should be used. A pressure of 25 tons should make a good safe fit. Pressures of 60 to 80 tons would strain a good wheel, and 25 to 40 tons were ample pressures. He had burst four wheels out of one lot with 25 tons. If 60 to 80 tons were applied in the West, every wheel would be rejected. Extraordinary pressure strained a wheel so as to render it somewhat unsafe; 25 tons is in my opinion sufficient.

Mr. MARDEN (Fitchburg): We have trouble with loose wheels under foreign cars. Our practice is to taper $\frac{1}{8}$ of an inch to the foot. In pulling off, we have had several wheels taken from foreign cars burst in two. I would ask at what pressure should a wheel be put on?

Mr. BILLINGS (Eastern): 25 to 30 tons is our practice. Mr. EASTMAN (Southeastern of Canada): I press on at 20 to 25 tons.

The PRESIDENT: We put the English steel wheel on at 63 tons, the Washburn and Allen wheels at from 50 to 60 tons.

Mr. COLBY (Boston & Albany): Our custom is to press on at from 30 to 50 tons, not less than 30. Instead of turning down the axle I would turn down the inside of wheel. We have not had a loose wheel for 20 years.

Mr. RICHARDS (Boston & Providence): I think wheel fits should taper; that has been our practice for many years. In pulling off very often it takes 120 to 135 tons to start a wheel. It is essential the taper should be alike on all roads.

Mr. EASTMAN: I have a new machine which bores to a slight taper, say about the thickness of note paper. If the axle is straight minus taper, loose wheels are very apt to develop themselves. The larger the diameter the more pressure is required. We had a loose 42-in. paper wheel last summer; it had run three years; the taper was slight and fit perfect. A standard taper is what is needed for the various roads.

Mr. FOSTER (Fitchburg): We have sizers in use 2 ft. long and tapering $\frac{1}{8}$ to the foot. Men do good work with them. We draw our wheels $3\frac{1}{4}$ in., the press in use is an old-fashioned screw pattern, and we have very few loose wheels.

Mr. GORDON (Concord): Our custom is to taper $\frac{1}{8}$ to the foot. I think a slight taper desirable.

The PRESIDENT: We tried once to crack a hub; it took 85 tons pressure to open a seam. The axle was $\frac{1}{8}$ in. larger than the hole. To prevent loose wheels the fit should be carefully made. I believe a uniform taper is very desirable. It is one of a thousand things we are desirous of perfecting. Conformity of the wheel to the rail is a matter the managers are now taking up, but the Road, Car and Engine departments are not yet working together on this point. Machinery, however, is fast solving the problem. I think there should be a slight taper. We have many loose wheels. Recently two Allen wheels 42 in. diameter were reported loose. They had been put on at 60 tons. If we could agree to a certain amount of taper it would be of convenience as a matter of record and guidance.

Mr. MARDEN: I move that $\frac{1}{8}$ in. in one foot be recorded as a proper taper for our axles. Carried.

After some general discussion on the subject of side and centre bearings of freight cars now in service, the club adjourned to convene again on Wednesday evening, March 26, 1884.

Cantilever Bridges.

Paper read by CARL GAYLER, before the Engineers' Club, St. Louis, Jan. 15, 1884.]

The recent completion of the double-track railroad bridge across the Niagara, not far from the old suspension bridge, within seven months, has turned the general attention to the peculiar system which has made this remarkable engineering feat possible. Although a small number of cantilever bridges has been built during the last 25 years in Europe and in this country, these isolated examples have always been looked upon more as curiosities than as structures worthy to be studied or imitated; but now, with the success of the Niagara Bridge and the adoption of the cantilever system for the Firth of Forth Bridge in Scotland on an immense scale, the opinion in regard to the system seems suddenly changed, and a few remarks on the same are likely to be listened to attentively.

The cantilever bridge is a suspension bridge so designed that the strain on the anchorage is only vertical, and that the horizontal component of the pull of the cables, or links or principal tensile members generally, is resisted by a compression member or strut which forms part of the superstructure. Such a strut reaches from each anchorage beyond the pier to a point of the middle span, where it connects again with the cable. This point may be the centre of the middle span, or the ends of the struts may leave a gap between them which is filled by a truss. Intermediate cables or links from the top of the piers to the struts, at any place where the loads are applied, complete the system.

Compared with the suspension bridge proper there is a gain in stiffness against moving loads; the system is stiff and the strains can be ascertained as easily and accurately as in a truss. The effects of the changes of temperature, the everlasting objection against stiffening trusses along floors suspended from elastic cables, can be eliminated entirely by treating each half of the bridge like one solid body resting on the pier and by providing for its expansion or contraction at the anchorage and toward the centre of the middle span.

This much has been gained. Common to both systems is the peculiarity that they are essentially 3-span bridges, or rather bridges consisting of one main span and a smaller one each side of it, and even the proportion of the length of these spans is to a great extent determined by the condition, that the middle span has to exceed the length of the side spans so far that its surplus of weight over the latter more than counterbalances the greatest moving load that may be brought on the side spans only.

But there is also a loss: By introducing the compression member the laws of expansion and contraction by temperature necessitate the cutting of the bridge into two equal parts. Each half becomes an independent beam balanced over the pier by the surplus weight of the middle span at one end and the resistance of the anchorage at the other end, and in consequence thereof this system shows greater deflections than any other. It will not be necessary to fatigue you by figures, but if you consider the long way which a strain caused by a load applied at the end of one arm in the middle span has to travel—up to the top of the tower, down to the stone work and the full length of the anchor bolts, until it finds resistance at the bearing of the latter—you will at once see the cause of this deflection as the elongation of a strained member is in direct proportion to its length. In an ordinary suspension bridge each load acts on and is resisted by the whole bridge, and as the anchorage of the suspension bridge fixes the position of the ends of the cables in a horizontal as well as in a vertical position, we gain on deflection whatever in the cantilever bridge is caused by compression of the strut.

We have seen that the amount of deflection of the middle span of the cantilever bridge is greater than that of the suspension bridge, owing to the independent action of its two portions, and for the same reason its effect makes itself felt in a more objectionable manner. By fully loading either of the two cantilever arms the one deflects fully, while the other keeps its position, and vice versa. The deflection of the main span of the suspension bridge represents a more or less regular curve from pier to pier; that of the cantilever bridge under moving loads is irregular, with sudden breaks in the middle of the span.

A well-designed cantilever bridge built by Ordish, the father of the system, in Prague, Bohemia, across the Moldau, in 1868, with a middle span of 464 ft. and side spans of 150 ft. length each, gave, under a test-load of only 45 lbs. per square foot, a deflection of $\frac{7}{16}$ in., while Hemberley's beautiful bridge at Pittsburgh—a stiff-hinged suspension

bridge, with a middle span of 800 ft.—showed a deflection of only 4 in. under about the same load per square foot.

Thus far we have considered the only kind of cantilever bridge known until, with the bridge over the Fraser River, on the Canadian Pacific Railway, and with the new Niagara bridge, the genius of Mr. Schneider has created a new cantilever bridge which will be welcomed as an exceedingly valuable addition to our stock of available types of bridges.

The tower, the horizontal strut and the links radiating from the top of the tower are changed into a stiff truss supported at or near its centre. The two trusses so formed carry between themselves a shorter truss, and at their shore ends they are anchored like the ordinary cantilever. At the same time the law in regard to the proportion of the length of spans is put aside, the top chord of the shore arm of each truss is made to resist compression as well as tension, and the anchorage receives alternately compression and tension. Each end of each cantilever has full play for expansion and contraction; the support over the piers allows the necessary motion for the deflection; in short, as will be hardly necessary to tell you, the design under the system adopted is admirable.

In its deviation from the old style of cantilever bridges, there has doubtless been a progress made in the general character of the structure. The strains are taken up by a stiff truss instead of being transferred over the top of a high tower, the resistance of the bridge against wind is considerably increased, but a doubt may well be expressed whether in future bridges of this kind the proportions of the spans will not be so adopted that pressure on the anchorage is avoided, except, of course, in cases where the positions of the pier and abutments are absolutely fixed by the locality, as we suppose this to have been the case at the sites selected for the Fraser River and the Niagara bridges.

To meet the changing strains in the anchorage the following arrangement has been adopted: The end pin of the cantilevers, or rather the lower pin of the short links which have been inserted on account of the influence of temperature, is at the same time held by the eyes of the anchor-bolts, and rests on a cast shoe.

Supposing now that the initial strain applied to the anchor bolts is sufficient to press the pin down to its bearing, a train which has reached the middle of the bridge will stretch the bolts and lift the end pins from their bearing; the train moves on, the strain at one anchorage is released and at the other it is suddenly changed, its end pin hammered down to its support. If we take into consideration that the strains in the anchor bolts produced by the weight of the superstructure are equal to half the weight of the intermediate span alone, and that the maximum strains in the same produced by the live load take place when the whole centre span, cantilever arms and intermediate span together are loaded, we see that the latter strains are considerably larger than the former, and that the extension of the bolts by live load is an important factor. Even the changes of temperature will have some effect on their length, although they are inside of the stone piers.

That the objection against cantilever bridges generally in regard to great deflection holds good also against the Niagara Bridge is shown by the result of the tests, as, even making full allowance for the compression of the piers, a deflection of $\frac{6}{16}$ in. is still considerable.

The great claim of the system of the Niagara Bridge to our esteem is that it has proved to be the right system at the right place, as no other form of bridge is conceivable which could have been erected at that locality so easily, in so short a time and without subjecting a single one of its members during the erection to a strain which after completion it would not have had to stand.

Wherever the difficulty of erection determines the character of the bridge the cantilever system may be resorted to, but otherwise its adoption will probably always be an exception.

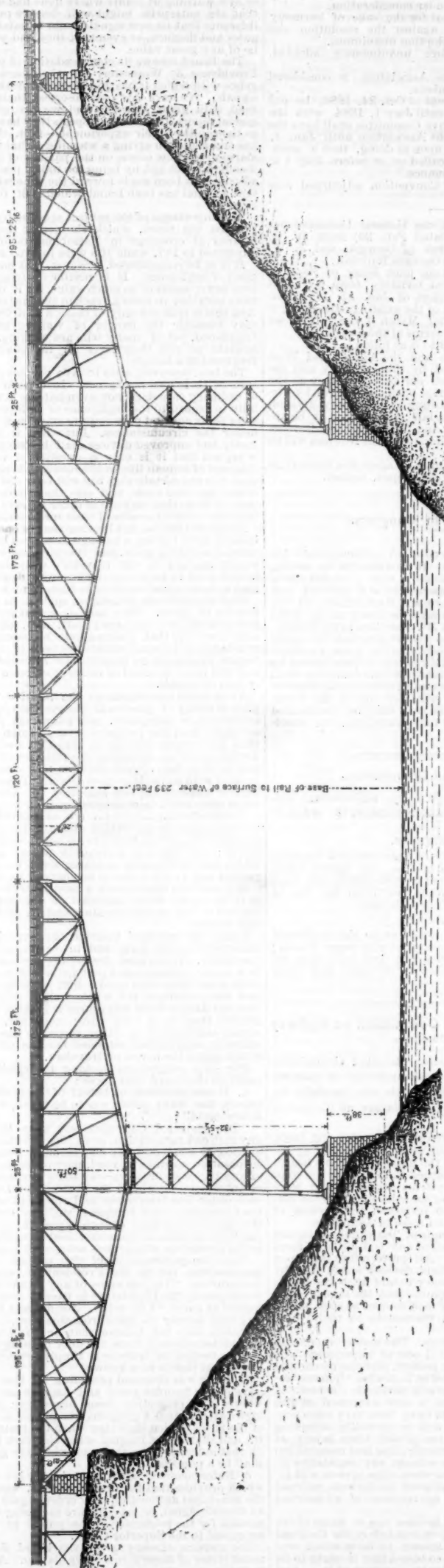
Niagara Falls Cantilever Bridge.

We publish this week a general elevation of the above bridge, and views of the shore and river arms of the cantilever. In future numbers the towers, piers, abutments and anchorage will be illustrated.

Many particulars of the bridge have already been given in the *Railroad Gazette*, especially on page 860 of our issue for Dec. 28, 1883, and in our number for Jan. 4 of this year. We may, however, repeat that the bridge was designed by Mr. C. C. Schneider, acting as Chief Engineer for the owner of the bridge, the Niagara River Bridge Company, which is principally formed of parties interested in the Michigan Central Railroad. The bridge was constructed and erected in the unusually short space of eight months by the Central Bridge Company, of Buffalo, N. Y., of which Gen. Geo. S. Field is President, and Mr. Edmund Hayes Engineer.

It will be seen from the general elevation of the bridge that the cantilever type is peculiarly well adapted to the site, giving, as it does, excellent facilities for erection by building out panel by panel over the strong current which renders any feasible false work under the centre span out of the question.

At the risk of some repetition of what is already known, it may be mentioned that the bridge consists of two steel towers or piers, each supporting a girder near its centre, the shore ends of these girders being anchored down to abutments, and the ends projecting over the river supporting a separate intermediate girder spanning the gap between the main girders, which are termed "cantilevers," from their projecting out on each side of their support. The whole bridge is thus formed of three girders, which are attached to one another, and to the abutments, by links, in such a manner that expansion and contraction due to varying temperature are allowed for, and independent vertical and longitudinal motion is permitted to each member, while laterally a sliding joint is formed which prevents any part of the bridge being displaced sideways by the effect of any wind pressure that may be brought against it. Referring to our illustration of the river arm of the cantilever, it will be noticed that the central girder is suspended from the outer point of the river arm by links A, which form the sole vertical connection between the cantilever and the centre girder. Either therefore is free to expand or contract, or assume an angle with the other in a vertical plane, and consequently this arrangement permits both the longitudinal expansion of the



NIAGARA FALLS CANTILEVER BRIDGE.
Designed by Mr. C. C. SCHNEIDER, and constructed by the CENTRAL BRIDGE WORKS, Buffalo, N. Y.

bridge, and any unequal expansion of the two steel piers, without throwing any undue strain on the structure.

The lateral continuity, giving strength to resist wind pressures, is obtained in the following manner: The pin on the lower end of the link A is connected by horizontal slotted bars to the end of the cantilever. This connection permits a relative horizontal or vertical movement, but as the links slide in contact with the sides of the bottom chord of the centre girder, and are braced by wind ties (as shown in plan in our illustration of the river arm), any lateral motion is impossible. The wind ties of the centre girder are brought up to the end pin, and the short distance between the two systems of wind ties prevents any serious cross breaking strain being brought on the horizontal slotted connecting link. Taken laterally, then, the centre slides between guides firmly attached to the cantilevers, and it is evident that before the wind can blow the centre girder sideways, either these guides must be sheared or the wind bracing give way. It is hardly necessary to call attention to the fact that numerous bridges simply rest on plates or rollers at their abutments, and have no guide or firm support against any lateral movement, while holding-down bolts often embrace so small a weight of masonry that they cannot offer any effective resistance to displacements. This point, of course, is well understood in good practice, but without referring to instances in our own country where bridges have been blown bodily sideways off their abutments, the notorious Tay Bridge may be referred to as a special case of neglect to provide any lateral support. In a site where the wind gathers exceptional force, the girders were simply placed on the piers, and consequently blew off because there was nothing to prevent them.

The shore arm is held down by links connected to a heavily weighted abutment, which counteracts the tendency of the shore arm to rise when the centre girder is heavily laden. Further illustrations and particulars of this abutment will be given in a future number of the *Railroad Gazette*.

The general dimensions of the bridge are as under:

Length over all centres of end pins	910 ft 19 1/2 in.
Length centre portion	119 " 0 "
Length each cantilever	395 " 2 1/2 "
Weight of wrought-iron towers	130 " 6 1/2 "
Weight of masonry piers	39 " 0 "
Depth of beton foundation fords	8 " 0 "
Length of panels, cantilevers	25 " 0 "
Trusses apart between centres	24 " 0 "
Depth cantilever trusses, over towers	28 " 0 "
" " river ends	26 " 0 "
" " shore ends	21 " 0 "
Depth of floor beams	4 " 0 "
Depth longitudinal stringer	2 " 6 "
Ties, white oak, 18 in. apart	0 in. by 9 in.
Guard timbers, white oak	8 in. by 8 in.

The total quantity of materials used in the bridge and towers, exclusive of the approaches, is as under:

Steel	1,272,000 lbs.
Wrought iron	3,093,000 lbs.
Cast iron	126,000 lbs.
Total	4,491,000 lbs.
Timber in floor	154,000 ft. B. M.
Beton in foundations	31,100 cubic ft.
Masonry in piers	2,800 cubic yds.
Do. anchorage piers	900 cubic yds.

The materials used in the superstructure is open-hearth steel and wrought iron. Towers and heavy compression members, such as lower chords and centre posts, are of steel, as are all the pins. All tension members are wrought iron. The only use made of cast iron is in the pedestals on the masonry and in filling-rings; the castings at the top of the towers are all steel.

An interesting paper on the subject of cantilever bridges will be found in another part of this issue of the *Railroad Gazette*.

Southern Railway & Steamship Association.

We give below the official report of the proceedings of the important convention held at the Metropolitan Hotel in Washington on Feb. 19 and 20 last, of which a brief note has heretofore been made:

Pursuant to call the Southern Railway & Steamship Association assembled in convention at noon, in Washington, Feb. 19, and was called to order by Hon. Joseph E. Brown, President, in the Chair, Chas. A. Sindall, Secretary. The following officers of the Association and representatives of members and lines working with the Association, were present:

Hon. Joseph E. Brown, President; Virgil Powers, General Commissioner; Charles A. Sindall, Secretary; Thomas E. Walker, Auditor; Milo S. Freeman, Examiner of Records; E. T. Hughes, General Agent; John Screven and T. H. Carter, Arbitrators.

Central of Georgia: Savannah, Griffin & North Alabama; Mobile & Girard; Port Royal & Augusta; Ocean Steamship Co.; Atlanta & West Point; Western of Alabama; W. G. Raoul, President; W. F. Shellman, Traffic Manager; G. A. Whitehead, General Freight Agent Central Railroad; James S. Davant, General Freight Agent Port Royal & Augusta.

Boston & Savannah Steamship Co.: A. A. Nickerson, President.

South Carolina Railway: A. A. Talmage, President; John B. Peck, General Manager; S. B. Pickens, General Freight Agent.

Georgia Railroad: J. W. Green, General Manager; E. R. Dorsey, General Freight Agent.

East Tennessee, Virginia & Georgia and Memphis & Charleston: Henry Fink, Vice-President and General Manager.

Norfolk & Western: Henry Fink, General Manager, Virginia, Tennessee and Georgia Air-Line; C. P. Hatch, General Freight Agent; W. A. Carpenter, Assistant General Freight Agent.

Richmond & Danville: A. L. Rives, Vice-President and General Manager; Peyton Randolph, Assistant General Manager; James H. Drake, Acting General Freight Agent. Charlotte, Columbia & Augusta, and Columbia & Greenville: A. C. Haskell, President; D. Cardwell, Assistant General Freight Agent.

Louisville & Nashville : Samuel B. Jones, General Agent.
Savannah, Florida & Western : James L. Taylor, General Freight Agent.
Charleston & Savannah : C. S. Gadsden, General Superintendent.

Rome Railroad : E. Hillyer, President.
Western & Atlantic : Hon. Joseph E. Brown, President ; W. C. Morrill, Vice-President ; R. A. Anderson, General Superintendent ; Jos. M. Brown, General Freight Agent.
Wilmington, Columbia & Augusta and Wilmington & Weldon : Hon. R. R. Bridgers, President ; J. F. Divine, General Superintendent.

Seaboard & Roanoke and Baltimore Steam Packet Co. : R. L. Poor, General Freight Agent.
Old Dominion Steamship Co. : W. H. Stanford, Secretary and General Freight Agent.

New York & Charleston Steamship Co. : Geo. W. Quintard, President ; B. D. Hasell, General Manager.
Coastwise Steamship Association : D. D. C. Mink, Vice-President ; B. D. Hasell, Secretary.

Clyde Steamship Lines : W. F. Clyde, D. D. C. Mink, Theo. G. Eger.

Merchants & Miners' Transportation Co. : George P. Ap-
pold, President ; William Plummer, Assistant to President.
Baltimore, Chesapeake & Richmond Steamboat Co. :
Reuben Foster, General Manager ; George F. Needham,
General Freight Agent.

Associated Lines of Virginia and the Carolinas : Sol.
Haas, Traffic Manager ; F. M. Ironmonger, General Agent,
New York ; James Hollingshead, General Agent, Balti-
more.

Great Southern Freight and Passenger Lines, via Char-
leston and via Savannah : W. H. Rbett, General Agent.
Western North Carolina : A. B. Andrews, President.
Kanawha Dispatch Line : E. Fitzgerald, Manager.

Brunswick & Western : Fred Wolfe, President ; H. S.
Morse, General Manager ; O. Benson, General Freight
Agent.

The President explained his reasons for calling this con-
vention, as given in his circular letter, and suggested that
the Executive Committee or a special committee take into
consideration the condition of the affairs of the Association
and submit to the convention such amendments or addi-
tions to the agreement as will best tend to harmony and the
perpetuation of the Association and the good results accom-
plished by it.

Hon. R. R. Bridgers spoke, indorsing the remarks of the
President, and suggested that the parties between whom
differences existed should meet with the General Commis-
sioner and endeavor to agree.

Mr. W. G. Raoul asked for the reading of the award of the
Arbitrators, as given in Circular Letter No. 24, series of
1883-84, which was done by the Secretary, after which Mr.
Raoul expressed his willingness to agree to the continuance
of the present agreement, if the principles of control of busi-
ness from local stations of roads controlled by a system and
the non-invasion of local territory were incorporated in the
agreement.

Mr. Henry Fink spoke, objecting to the incorporation of
any but general principles in the agreement, and opposing
Mr. Raoul's views, and spoke of the difficulty of controlling
rates, because of the action of state commissions, etc.

Mr. Sol. Haas moved that a committee composed of the
Presidents and General Managers present, and the repre-
sentatives of the Coastwise Steamship Association, be ap-
pointed to draft a suitable agreement or contract, and sub-
mit the same to the Convention for ratification.

Mr. A. C. Haskell, seconded Mr. Haas' motion in a few
remarks, recommending conciliation and compromise on
both sides.

The motion, being put, was carried.
After some further discussion Mr. Haas moved a recon-
sideration of the vote just taken, with the view of reducing
the number on the Committee. Carried.

Mr. Fink moved that the whole matter be referred to the
Executive Committee.

Mr. Raoul moved as an amendment, that the President of
the Association be added to the Committee.

The amendment was carried, and the motion as amended,
carried.

On motion of Mr. G. W. Quintard the Convention ad-
journed until 7 p. m.

EVENING SESSION.

The Convention reassembled, but the committee appointed
on agreement, etc., not being ready to report, a recess of
one hour was taken. After the recess Mr. Virgil Powers,
General Commissioner and Chairman, submitted the report
of the Committee on Agreement, etc., recommending the
adoption of the agreement of Oct. 24, 1883, with the fol-
lowing additions:

"With a view to prevent fluctuations of rates injurious to
the public interests and the invasion by any road of the
local territory of other roads, it is agreed that the total
rates for all business to and from any unpooled point in the
territory covered by the roads of this Association, shall be
fixed by the road upon which such unpooled point is situ-
ated; provided, that the through rate so fixed shall not ex-
ceed the lowest combination of locals.

"The term joint traffic used in this agreement is under-
stood to mean that traffic to and from those points are
reached by the lines of two or more systems.

"The local business exempted from the jurisdiction of
the Association, by the last paragraph of Section 5, is
understood to refer to the local business of all the roads
and branches of the controlling system."

Mr. John B. Peck moved the report be received and
adopted. Seconded by Mr. Raoul.

Mr. Fink stated that he had dissented from the report of
the majority and that the report, if adopted, would not be
binding on the East Tennessee, Virginia & Georgia Railroad
Co.

Upon the vote being taken by a call of members the re-
port was adopted by a vote of 21 ayes to 4 noes. (Absent 7,
not voting 4.)

The following resolution was offered by Mr. A. L. Rives,
seconded by Mr. Haskell:

"As the continuance of the Association is considered of
grave importance to its members,

"Resolved, That the agreement of Oct. 24, 1883, be put
in effect and continue in force until June 1, 1884, with the
understanding that the Executive Committee shall have the
power, on June 1, to continue the Association until Jan. 1,
1885; but if not able to agree upon so doing, then a meet-
ing of the Association shall be called on or before July 1 to con-
sider the question of continuance."

Mr. Fink, before a vote on the foregoing was put, but
after it was handed to the Secretary, had given notice of
the withdrawal of the East Tennessee, Virginia & Georgia
Co. from the Association, but withdrew said notice to allow
a full vote on the resolution. A vote being taken the
resolution was adopted, but not unanimously. After which
Mr. Raoul gave notice that he could not consider his com-
panies as members of the Association after March 1, 1884.

Remarks tending to conciliation and harmony were made
by the President, Mr. Haskell, Mr. Bridgers and others, after
which, on motion of Mr. W. F. Clyde, the Convention
adjourned until 10 a. m. next day.

SECOND DAY.

The Convention reassembled pursuant to adjournment,
all representatives being present.

The resolution offered by Mr. Rives, at the night session
of the 19th, was again taken under consideration.

Mr. Raoul spoke, stating that for the sake of harmony
he would withdraw his vote against the resolution and
accept it, thereby making its adoption unanimous.

The resolution was therefore unanimously adopted,
reads:

"As the continuance of the Association is considered
of grave importance to its members,

"Resolved, That the agreement of Oct. 24, 1883, be put
in effect and continue in force until July 1, 1884, with the
understanding that the Executive Committee shall have the
power on June 1 to continue the Association until Jan. 1,
1885; but if not able to agree upon so doing, then a meet-
ing of the Association shall be called on or before July 1 to
consider the question of continuance."

On motion of Mr. Clyde the Convention adjourned *sine
die*.

A circular from the office of the General Commissioner
contains the following letter (dated Feb. 25) from W. G.
Raoul, President of the Central of Georgia, and J. W.
Green, General Manager of the Georgia Railroad:

"We beg to inform you that our joint letter of Sept. 8,
1883, withdrawing certain local territory from pool, and
which, under award of arbitrators of Jan. 17, 1884, was
suspended during the existence of the existing agreement, is
hereby reinstated from and after March 1 next. This we
construe to be our rights under terms of the award."

[The letter of Sept. 8 referred to is as follows:

"The Western of Alabama and the Atlanta and West
Point Railroad being controlled by this company and the
Georgia, we consider it as much our local territory as the
other roads we work in connection with our system by vir-
tue of control, and we are unwilling to make any division
of the business with other lines, but request that it be ap-
portioned between the Georgia and Central railroads—one
half each. We believe it is understood that Newnan will be
divided in the same way."

This letter is regarded as opening up again the matters in
controversy which had been, it was hoped, settled.

Transportation in Congress.

In the Senate on Feb. 27:

Mr. Lapham (N. Y.) introduced a bill to incorporate the
Yellowstone Park Railroad Co. It provides for the issuing
of a charter to a joint stock company, with a capital not to
exceed \$10,000,000, for the construction of a railroad and
telegraph line from a point at or near Market Lake, in the
county of Oneida, Idaho, through the Teton range of the
Rocky Mountains to the foot of Mt. Sheridan, in the Yellow-
stone Park, Wyoming, thence to a point at or near the upper
falls, Yellowstone River, and thence to the most available
point on the Northern Pacific Railroad, to be determined by
the company. It provides, further, that the company shall
not charge more than 7 cents per mile for the transportation
of passengers, or more than 15 cents per ton for the trans-
portation of freight, and that the road shall be commenced
within two, and finished within four years from the enact-
ment of this bill into law.

New York Railroad Commission.

The following circulars have been issued, addressed to offi-
cers of New York railroads, by the Secretary, by order of
the Board:

OVERHEAD BRIDGES.

Will you please send to this Board a statement of the num-
ber and location of all overhead bridges and tunnel open-
ings on each railroad line operated by you within this state
where there is less than 20 ft. in the clear from the top of
the rail? Also the exact height in each case.

PAPER WHEELS.

Will you please inform this Board as to the number of
passenger coaches on your road supplied with paper wheels;
also, any information or statistics you may have as to the
comparative durability and strength of paper and other
wheels; and also comparative prices?

The Massachusetts Railroad Commission on Highway Grade Crossings.

The report of the Massachusetts Railroad Commission
contains the following remarks on the question of railroad
crossings of highways at grade, which was specially re-
ferred to the Commission by the Legislature at its session
last year:

A public hearing was fully advertised for July 16, 1883,
and several persons appeared, but none were ready at the
time to submit their devices for the inspection of the board.
The hearing was therefore adjourned to Oct. 31, when rep-
resentatives of various signal systems appeared and were
duly heard, with the managers of some leading railroad cor-
porations. The board have also inspected the working of
several signals, some in model and some in actual use.

Upon one point all the friends of the different signals
were agreed. None of them desired any legislation to force
their own inventions into use. All preferred to rely upon
the favor which they hoped their devices would find by
their merits. It is hardly necessary to add that the man-
agers of the several railroad companies took the same ground
and desired to be left free to try such devices as they please,
and to accept such as commend themselves to their judg-
ment upon trial.

In these views the board concurs. The matter of crossing
signals (as of other signals) is still one of experiment and
development. No system is yet perfect, perhaps no one has
yet been rendered as near perfect as it can be. Opinions are
not yet agreed as to which of various devices is the best. A
great amount of inventive talent is now exercised in this
direction, and railroad managers have been very enterpris-
ing and very liberal in trying and in partially accepting
various systems for protecting the public from injury at
their crossings. For a time, certainly, this free competition
among inventors ought to go on without any legislative in-
tervention. The time may come when some system will be
so far advanced that it will be adopted by the best railroad
companies, and when it may be required of all railroad
companies.

This board has been criticised because one or more of its
members stated, when the subject was before the Railroad
Committee, that no device was known to them which was
satisfactory, or which had been so tested that it ought to be
adopted as a crossing signal under the sanction of law. And
it has been supposed that this statement was inconsistent
with the fact that the Board had commended one railroad
company for placing electric signals at several crossings.

But the commendation of a company for trying a new
device as an experiment is by no means a full approval of
that device as a perfected and established safeguard. In this
case it has been adopted as supplemental to other safeguards,
or as a warning at points where none had existed before; so
that the enterprise might well deserve praise without any
inference that its new signals could be safely used instead of
gates and flagmen, or even that they had yet been shown to
be of any great value.

The Board renews its commendation of this company (the
Providence & Worcester) for the liberality and intelli-
gence with which it has gone forward in the use of crossing
signals. We have this year observed their working on this
road with great interest, and we are glad to learn, by a
special report, that in two respects they have been improved,
as the result of their experiments—first, that they will fail
less frequently in giving a warning signal; second, that the
alarm given now ceases on the passage of the train, so that
its effect is not lost by being too much prolonged. Thus an
advance has been made toward the time when it can be said
that a signal has been found which is fit for general adop-
tion.

The importance of the subject appears by the returns for
the last ten years, which show that the number fatally
injured at crossings in Massachusetts during that period
amounted to 147, while 168 were injured not fatally.

It is to be remembered, however, that many of these were
cases of negligence. It is matter of frequent remark that
time never seems of so much value as it does to men who
have occasion to cross a track in the face of a coming train.
And this is true not only of those who drive across and who
may consider the danger of waiting until the horse is
frightened, but of many who are walking, and who do not
hesitate to risk their lives for the chance of saving the
fragment of a minute.

The law, however, aims to save persons even from the re-
sults of their own negligence. In certain cases mere want
of ordinary care does not even bar an action. And espe-
cially in regard to the negligence of children, the courts con-
sider their age and only require such care as is reasonable
under the circumstances. But when it is demanded that
costly and unproved devices shall be adopted, and when it
is argued that it is only a question of money on the one
side and of human life on the other, it is right to remember
that it is not certain that life will be saved after the expen-
diture has been made, and also that there is a limit to the
duty of incurring expense in order to save men and women
from the natural results of their own reckless folly.

It was testified at this hearing that in one case a traveler
insisted upon forcing a passage through a half-closed gate in
spite of a coming train, and the gate-keeper's face was se-
verely marked by the traveler's whip because the gate-
keeper tried in vain to save him from death. With such a
man a mere signal would have been of no avail.

Such incidents are sometimes quoted to show the insuffi-
ciency of gates. They only show that gates are not a per-
fect security, but they are proofs, also, of a disposition in
some travelers that makes a gate necessary at frequented
crossings; and they illustrate the need of some better pro-
tection at such places than can be afforded by a flagman,
and still more the need of better protection than that of any
system of signals.

At all great thoroughfares the positive, visible, and tan-
gible security of gates will always be required until some
entirely new safeguard, not known at present, has been
devised. And the presence of a flagman is more efficient
than any system of gongs or bells that we have seen. Such
devices are of use in calling the attention of gatemen or flag-
men to their duty. And the time may come when they can
be used with advantage upon slightly frequented crossings,
but for reasons already indicated the time has not come
when this should be demanded by law.

Another strong reason for not exclusively relying on any
crossing upon the protection afforded by any signal made
known to us, is that they are all liable to fail of giving an
alarm; and however infrequent failure may be, a signal
which may fail to give an alarm must be regarded as im-
perfect and as not ready to be adopted by law.

It is not true that in such a case the traveler is as well off
as if no signal were stationed on the highway. He has
learned to rely on the warning, and its absence tempts him
into danger.

Upon one practical question the experience of railroad
managers in this state and in Connecticut seems to us
conclusive. It has been feared that crossing signals would
be a terror to horses, and perhaps would in this way accom-
plish more harm than good. But, while accidents have now
and then occurred, the whole weight of testimony shows
that the danger from this source is greatly over-rated; that
trouble from it is very rare; and that, when a crossing
signal, satisfactory in other respects, has been found, its
adoption need not be postponed because of the danger that
it will alarm the horses of travelers.

The only suggestions looking to legislation that were
made to the board were these:

1. It was proposed, on behalf of one of the railroad com-
panies, that if any action was to be taken, it should be by the
following bill:

"The Railroad Commissioners, upon the application of
any railroad corporation, or of the selectmen of any town
or the city council of any city through which such railroad
corporation operates its road, may order any grade crossing
of any highway or town-way to be furnished with electric
or automatic signals for the protection of travelers; when
such order has been made and complied with by such rail-
road company said company shall be deemed, except in the
case of the failure of such signals to give the warning
expected of them, to have exercised due and reasonable care
in the protection of travelers using such grade-crossing."

Upon the presentation of this project for a statute the
question was put to the President of a leading railroad
corporation: "Do you know of any signal in existence that
would justify the Legislature in passing such a bill?" And he
replied at once: "I do not." Nor did any representative of
any road appear to differ from this view. And the board
certainly does not believe that any railroad corporation
should be relieved from the duty of using other means for
the protection of travelers, simply because it has adopted
any signal that is now known.

2. A bill was proposed providing (1) that the board shall
have power to order gates and flagmen at grade-crossings
where such protection seems necessary; (2) that at other
highway-crossings a gong shall be placed at the intersection
of the roads, which shall ring when the train is within 1,000
ft., and shall cease ringing when the train has passed; and
(3) that entrance upon the track while the gong is sounding
shall be a punishable trespass.

3. Reference was also made to the law of Connecticut,
which provides that the Commissioners, when requested by
the municipal authorities, may order a gate or a flagman or
an electric signal, or may require the doing of any other act
needful for the protection of the public at the place, with
an appeal to the Superior Court.

For reasons already given the board does not recom-
mend either of these forms of legislation. And in addition
to the reasons given above we would suggest that the exist-
ing statutes indirectly give all the power needed. The
county commissioners or the Railroad Commissioners, when
called upon to order gates or flagmen, consider all the cir-

circumstances tending to prove or to disprove the need of such safeguards. Among other circumstances the use of an approved signal may be regarded as showing that at the particular crossing in question further and more costly safeguards may safely be dispensed with. One careful board of county commissioners has regarded the adoption of a bell at a certain crossing as a good reason for not ordering the erection of gates at that place.

As signals improve, and as their value is tested by use it may be found that practically the boards having charge of highway safeguards possess already all the authority in this direction that is desirable.

4. It was proposed that the board recommend an amendment of Section 207, Chap. 112, Public Statutes, forbidding the injury of "any electric signal," either by striking out the word "electric," or by inserting the words "or other" after it, so as to give legal protection to pneumatic and other signals not electric. This seems to be a plain matter of justice, and such an amendment is respectfully recommended.

Examining Employees.

An exchange says that the New York, Lake Erie & Western Co. will soon adopt a system which will require the train employees and those handling the traffic of the company to undergo a thorough examination in regard to the general and special instructions, the use of signals, and to be fully posted in relation to the time of each train, which appears upon the time-cards at each station. At stated intervals an examiner will pass over the line of the road, who, after each examination, will report the results of the same to the division superintendent. It must surely act as an incentive to those in whose hands are placed life and property, leading them to become masters of their positions.

ANNUAL REPORTS.

(For other Annual Reports see page 195.)

Pennsylvania Railroad.

The annual report of this company for 1883 covers in the first place the lines worked directly, which are as follows:

1. The Pennsylvania Railroad Division, including the main line from Philadelphia to Pittsburgh, 358 miles, with 956 miles of branches; a total of 1,314 miles, being an increase of 50 miles of branches.
 2. The United Railroads of New Jersey Division, including the main line from Jersey City to Philadelphia, 89 miles, and 346 miles of branches, an increase of 5 miles; the ferries over the Hudson and Delaware rivers; the Delaware & Raritan Canal, 66 miles; a total of 435 miles of railroad and 66 miles of canal.
 3. The Philadelphia & Erie Division, a main line from Sunbury, Pa., to Erie, 288 miles.
- Making in all 2,037 miles of railroad (an increase of 55 miles) and 66 miles of canal, the earnings whereof were as follows:

I. PENNSYLVANIA RAILROAD DIVISION.				
	1883.	1882.	Inc. or Dec.	P. c.
General freights.....	\$24,536,789	\$23,517,178	I.	\$1,019,611 4.3
Miscellaneous freights.....	241,401	215,410	I.	25,991 12.1
First-class pass.....	5,812,584	5,567,561	I.	245,023 4.4
Emigrant pass.....	177,041	271,016	D.	93,975 34.7
Adams Express.....	465,265	462,361	I.	2,904 0.6
U. S. mails.....	484,353	506,921	D.	22,568 4.4
Miscellaneous passengers.....	125,798	123,877	I.	1,921 1.6
Rents.....	174,582	172,638	I.	1,944 1.1
Total.....	\$32,017,813	\$30,836,062	I.	\$1,181,751 3.8
Expenses.....	18,321,413	17,878,776	I.	442,637 2.5
Net earnings.....	\$13,696,400	\$12,957,286	I.	\$739,114 5.7
Gross earn. per mile.....	24,920	25,485	D.	665 2.6
Net earn. per mile.....	10,617	10,709	D.	92 0.8
Per cent. of exps.....	57.22	57.98	D.	0.76
Net earnings from operating.....	\$13,696,399.73			
Interest from investment in cash.....	4,113,058.77			
Interest on equipment, branch roads.....	286,141.17			
Profits from sundry accounts.....	84,477.30			
Empire Line net earnings.....	163,282.55			
Total.....	\$18,373,359.52			
Rentals, etc., branch roads.....	\$1,687,939.02			
Harrisburg & Lancaster.....	123,917.42			
Interest, bonded debt.....	3,248,805.60			
State of Pennsylvania.....	160,092.94			
Car trusts.....	341,443.23			
Mort. and ground rent.....	103,415.91			
General account, exchange, etc.....	9,401.19			
Stock trust certificates.....	378,380.00			
State tax on dividends.....	376,532.40			
Total.....	\$6,429,927.80			
Net income Pennsylvania R. R. Division.....	\$11,943,431.72			

II. UNITED RAILROADS OF NEW JERSEY DIVISION.

	1883.	1882.	Inc. or Dec.	P. c.
General freights.....	\$7,984,145	\$7,549,963	I.	\$434,182 5.7
Miscellaneous freights.....	285,798	293,216	I.	7,418 2.5
First-class pass.....	5,490,381	5,184,213	I.	306,168 5.9
Emigrant pass.....	51,866	67,052	D.	15,186 29.3
Express.....	342,227	324,490	I.	17,737 5.5
U. S. mails.....	178,091	188,311	D.	10,220 5.4
Miscellaneous passengers.....	70,030	70,865	I.	835 1.2
Del. & Rar. Canal.....	548,055	553,418	D.	5,363 0.9
Total.....	\$14,956,595	\$14,231,458	I.	\$725,137 5.1
Railroad exps.....	10,513,338	9,874,314	I.	639,024 6.5
Canal exps.....	291,575	294,780	D.	3,205 1.1
Total.....	\$10,804,913	\$10,169,094	I.	\$635,819 6.2
Net earnings.....	\$4,151,682	\$4,092,364	I.	\$59,318 1.4
Gross earn. per mile.....	29,913	28,692	I.	1,221 4.2
Net.....	8,303	8,190	I.	113 1.4
Per cent. of exps.....	72.24	71.46	I.	0.78
Net earnings from operating.....	\$4,151,682.39			
Interest on investments, in cash.....	311,649.96			
Total net income.....	\$4,463,332.35			
Dividends, interest, etc.....	\$5,008,429.15			
Interest on equipment, Belvidere Div.....	48,818.19			
Total.....	\$5,117,247.34			
Net loss under the lease.....	\$653,914.99			

III. PHILADELPHIA & ERIE DIVISION.

	1883.	1882.	Inc. or Dec.	P. c.
General freight.....	\$3,243,573	\$3,138,456	I.	\$105,117 3.3
Miscellaneous freights.....	108,845	115,018	D.	6,173 5.4
First-class pass.....	660,454	660,765	D.	311 0.0
Emigrant pass.....	7,280	8,246	D.	967 12.9
Adams Express.....	44,822	47,900	D.	3,078 6.4
U. S. mails.....	27,468	27,464	I.	4 0.0
Miscellaneous passengers.....	16,362	13,564	I.	2,798 20.5
Total.....	\$4,108,843	\$4,011,413	I.	\$97,430 2.4
Expenses.....	2,620,823	2,599,534	I.	21,289 0.8
Net earnings.....	\$1,488,020	\$1,411,879	I.	\$76,141 5.4
Gross earn. per mile.....	14,267	13,929	I.	338 2.4
Net.....	5,167	4,902	I.	265 5.4
Per cent. of exps.....	63.78	64.80	D.	1.02
Net earnings, as above.....	\$1,488,019.54			
Interest on equipment and extraordinary expenses.....	172,281.12			
Total.....	\$1,315,738.42			

Balance paid Philadelphia & Erie Co. as rental... \$1,315,738.42

GENERAL INCOME ACCOUNT.

The general results of the year are expressed in the income account as follows:

Net income Pennsylvania R. R. Div., as above.....	\$11,943,431.72
Net loss, New Jersey Division.....	653,914.99
Net income for the year.....	\$11,289,516.73
Payment to fund for purchase of securities.....	\$600,000
Consolidated bonds redeemed.....	280,860
Allegheny Valley R. R. advances.....	661,610
Frederick & Penna. Line, deficiency in interest.....	15,000
American Steamship Co., advances.....	180,000
Total.....	1,736,870.00
Balance to credit of income.....	\$9,552,646.73
Dividends, 8½ per cent.....	7,580,649.75
Balance to profit and loss.....	\$2,021,996.98
Old accounts, depreciation, etc.....	603,452.36
Total credit to profit and loss for the year.....	\$1,418,544.62
Balance, Dec. 31, 1882.....	12,194,639.41
Balance to credit of profit and loss, Dec. 31, 1883.....	\$13,613,184.03

The report continues: "The division made of the profits of the past year was fully as large as a conservative management of your property would warrant; the amount carried to the credit of profit and loss not being greater than was prudent, especially in view of the fact that, owing to the depression in the manufacturing and mining interests of the country, the increased number of roads competing for through traffic, and the constant tendency to lower rates, the gross revenues of the important railway lines have for some months past shown a decrease as compared with the same period of last year, without a corresponding reduction in expenses.

"The policy adopted by the board in 1882, of giving the shareholders the option of converting a portion of their dividends into stock, and of making an additional allotment of shares at par, was continued during the past year, the actual dividends being nearly 10 per cent. This plan enables the company to make use of its current earnings for capital account instead of permitting them to accumulate until the regular dividend periods, while the option before referred to enables the shareholders to acquire additional stock on favorable terms, and reimburses your treasury for the money temporarily used for construction purposes. Your board are satisfied that it would be to the best interests of the shareholders to continue the practice of paying limited cash dividends, and such extra dividends convertible into stock, as the profits of the company may from time to time warrant.

"The securities of branch and auxiliary lines now owned by the company amount at their par value to \$125,405,519, and are represented on the books at a cost of \$95,331,716. The income derived therefrom during the year amounted to \$4,113,059, which was \$214,322 in excess of the interest upon your entire funded indebtedness. This fact should be especially gratifying to the shareholders, as the principal object sought to be attained by the investment of this large sum of money—the proper protection of the interest of your company—has not only been secured, but the prudence of the investment further shown in its yielding an income more than sufficient at the present time to meet the interest on your direct obligations.

"The results of the Pennsylvania Railroad Division for the past year show a steady increase both in gross and net revenues.

"Upon the United Railroads of New Jersey there was a very fair increase in gross revenues, but the percentage of expenses is still high. The results from the direct operations of the line were about \$90,000 better than for the preceding year; the apparent increased loss upon that division arising from the fact that the discount on the conversion of 6 into 4 per cent bonds had been directly charged against its income.

"The Philadelphia & Erie Railroad Division continues to show an improvement, both in gross revenue and net results; so that the line after providing for the interest on its funded indebtedness had a balance of about \$215,000 to appropriate to the redemption of past-due coupons owned by the Pennsylvania Railroad Co.

NEW CONSTRUCTION.

"To provide the additional facilities needed on your Main Line and the New Jersey Division, and to aid in the construction of additional branch and auxiliary lines necessary for the promotion and protection of your traffic, there was obtained: Through allotments to the shareholders and the privilege of converting a portion of their dividends into stock, and from the sale of \$3,000,000 of the collateral trust loan, the sum of \$10,168,450.

"Of this amount there have been expended the following sums, the balance remaining in your treasury:

Pennsylvania Railroad, construction.....	\$735,535
Equipment.....	1,645,377
Real estate.....	273,995
Total, Pennsylvania Railroad.....	\$2,654,907
United N. J., construction and real estate.....	365,904
Philadelphia & Trenton, construction and real estate.....	221,411
Improvements on branch and auxiliary lines.....	\$1,292,140
New branch and auxiliary lines.....	4,771,836
Total.....	\$6,063,976
Loss received from above companies in cash.....	956,734
Total.....	\$5,107,242
Total expended on capital account.....	\$8,349,464

The largest amount on any one line was \$3,800,702, on the Pennsylvania Schuylkill Valley road.

"On account of the above advances to branch and auxiliary lines there have been received in securities of those companies \$4,997,909.84.

"While these expenditures may appear large, yet they are not so when proper consideration is given to the wide extent of territory covered by your lines, and the amount of capital invested therein. Such an extended system of rail ways could not be regarded as a sound and prosperous condition unless they demanded an investment of capital at least equal to that which has been heretofore annually made."

FINANCIAL.

"The outlay during the present year for similar improvements and facilities upon the Main Line and branches and the United Railroads of New Jersey Division, and for the completion of the lines now in process of construction, and such new branches as may be necessary, will probably reach the sum of \$5,500,000. This amount it is proposed to obtain by continuing the policy of giving the shareholders the option of converting a portion of their dividends into stock, and by the sale of securities of auxiliary lines, and of additional amounts of the \$10,000,000 of trust certificates which your board deemed it prudent to create for this purpose. These certificates bear interest at 4½ per cent. per annum, and are secured by a deposit of bonds of your branch and auxiliary lines representing a par value of \$12,500,000. A sinking fund has been established for the purpose of retiring the certificates thus issued. In the judgment of your directors it was bet-

ter for your interests to place these securities in trust, and issue the obligation of your company against them as collateral, than to sell them. As before noted, \$3,000,000 of the certificates have been sold, leaving \$7,000,000 on hand.

"The debt due to the state of Pennsylvania on account of the purchase of the main line was reduced during the year by the payment of \$299,907, which was charged to capital account. The balance of the annual payment of \$480,000 (\$160,000) representing the interest upon the amount due to the state, was charged directly to income account. The balance due on account of the purchase of the Main Line is \$2,976,003.

"Under the provisions of the consolidated mortgage of the company there was set apart on July last, out of the net income, the sum required for the purchase of outstanding bonds secured by that mortgage, and entitled to the security of the covenants therein, in relation to the sinking fund. Bonds to the par value of \$280,860 were thus purchased, and, after being canceled, were delivered to the trustees under the stipulations of the said mortgage; this reduction appears in the Treasurer's general account. The amount of bonds so purchased to date is \$1,489,610 at their par value.

"There are now in the sinking fund, for the redemption of the obligations of the various companies forming the United New Jersey Railroad & Canal Co., securities of the par value of \$2,140,800. There is also a cash balance, uninvested by the trustees, of \$149, making an aggregate investment of \$2,140,949, for which you will, in the future, in accordance with the terms of the lease, receive bonds to be issued under the general mortgage of that company.

"A loan of the joint companies—viz., the Delaware & Raritan Canal Co. and Camden & Amboy Railroad & Transportation Co.—for \$1,700,000 matured Feb. 1, 1883, and a balance of \$124,000 of a loan of the same companies having previously become due, bonds to the amount of \$1,824,000, bearing interest at the rate of 4 per cent. per annum, maturing Feb. 1, 1883, were issued under the general mortgage of the United New Jersey Railroad & Canal Co. for \$20,000,000, and sold on satisfactory terms, the proceeds being used to pay off the loans first referred to.

"The sinking fund for the redemption of the trust certificates issued for the purchase of the shares of the capital stock of the Philadelphia, Wilmington & Baltimore Railroad Co., was sufficient to enable the Trustees to purchase \$428,000 of such certificates during the past year. These certificates have been canceled as provided in the trust agreement. The general account of the Treasurer shows this reduction in the amount of outstanding certificates, and a corresponding reduction has been made on the other side of the account in the cost of the shares purchased by your company. The total amount of these certificates purchased and cancelled to Dec. 31, 1883, is \$857,000.

"The mortgage bonds of the Harrisburg, Portsmouth, Mount Joy & Lancaster Railroad Company, amounting to \$700,000, bearing interest at 6 per cent. per annum, became due July 1, 1883. These bonds were extended for 30 years, under the security of the same mortgage, and the rate of interest reduced to 4 per cent. per annum.

CAR TRUSTS.

"Further provision was made, under the system of car trusts, for the equipment of your roads, to the extent of 500 hopper gondolas and 525 box cars for the main line and 4,987 box, gondola and stock cars for the roads in which your company is interested west of Pittsburgh.

"The outstanding certificates of Series C and D of the Car Trust of Pennsylvania, representing 2,000 cars, at a cost of \$1,035,000, and bearing interest at 6 per cent. per annum, were paid and canceled during the year. The cars furnished under Series C having thus passed into your ownership, the equipment account was increased \$250,000, one-half of their original cost, the balance remaining charged to profit and loss. The cars furnished through Series D having been sub-leased to your lines west of Pittsburgh, the same plan was pursued by those lines, as shown in their accounts.

The 16,809 cars placed on the lines east of Pittsburgh, through the system of car trusts, represent a cost of \$9,038,380. The 10,487 cars west of Pittsburgh..... 5,431,370

The cars subleased to other lines controlled by your company, viz.:

Northern Central Railway Co., 1,250 cars..... \$729,750

Allegheny Valley Railroad Co., 250 cars..... 137,500

867,250

Total, 28,796 cars..... \$15,337,000

Total payments for cancellation of certificates to Dec. 31, 1883..... 7,182,000

Balance of certificates outstanding, Dec. 31, 1882..... \$8,155,000

The payments made represent \$5,034,000 canceled in full payment for 9,214 cars, and \$2,148,000 paid on account of 19,582 cars.

COMPARISONS.

The total earnings and expenses of all the lines east of Pittsburgh and Erie were:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$51,083,252	\$49,079,833	\$2,003,419	4.1
Expenses.....	\$31,747,150	\$30,647,405	\$1,099,745	3.6
Net earnings.....	\$19,336,102	\$18,432,428	\$903,674	4.9
Rentals and interest on equipment.....	3,805,702	3,472,713	332,989	9.6
Net balance.....	\$15,530,400	\$14,959,715	\$570,685	3.8

The gross earnings per mile of the main line from Philadelphia to Pittsburgh were \$74,638. The earnings of the New York Division (including the main line from New York to Philadelphia and 17 miles of branches) were \$102,557 gross and \$27,206 net per mile—certainly the largest gross earnings per mile in this country.

The percentage of expenses to gross earnings on the several lines was as follows:

	1883.	1882.	1881.	1880.
Pennsylvania R. R., main line.....	55.79	56.80	54.37	51.98
Pennsylvania R. R., inc. branches.....	57.22	57.98	55.95	54.07
United N. J., main line.....	73.47	71.90	67.11	67.99
United N. J., inc. branches.....	72.97	72.19	68.73	70.86
United N. J., inc. branches and canal.....	72.94	71.46	67.66	71.19
Del. & Raritan Canal.....	53.20	53.27	42.94	79.00
Phila. & Erie.....	63.78	64.80	70.35	63.27

The Pennsylvania Railroad main line is the 358 miles from Philadelphia to Pittsburgh. The United New Jersey main line is the 89 miles from New York to Philadelphia.

TRAFFIC.

The traffic of the lines east of Pittsburgh and Erie was:

	1883.	1882.	Inc. or Dec.	P. c.
Passengers carried:				
Main Line and branches.....	10,697,474	10,372,804	I.	324,660 3.1
United N. J.....	11,349,330	10,467,504	I.	871,826 8.3
Phila. & Erie.....	1,045,054	1,047,594	D.	2,540 0.2
Total.....	23,091,858	21,887,902	I.	1,203,956 5.5

Passenger-miles:

	1883.	1882.	Inc. or Dec.	P. c.
Main line and branches.....	244,710,876	245,971,773	D.	1,260,896 0.5
United N. J.....	238,561,431	227,938,390	I.	10,623,041 4.7
Phila. & Erie.....	21,908,174	22,202,765	D.	294,591 1.3
Total.....	505,180,481	496,202,927	I.	8,977,554 1.8

Tons carried:	1883.	1882.	Inc. or Dec.	P. c.
Main Line and branches.....	21,674,160	20,360,399	I.	1,313,761 6.5
United N. J.....	8,655,567	8,241,264	I.	414,303 7.4
Phila. & Erie.....	5,154,935	5,579,353	D.	424,418 7.6
Del. & Raritan Canal.....	1,694,884	1,659,044	I.	35,840 2.2
Total.....	37,379,546	35,840,060	I.	1,539,486 4.3
Ton-miles:				
Main line and branches.....	2,896,892,567	2,879,542,701	I.	117,349,866 4.1
United N. J.....	542,827,918	521,869,010	I.	20,958,908 4.0
Phila. & Erie.....	320,249,716	510,433,376	I.	9,816,340 1.9
Del. & Raritan Canal.....	66,632,686	65,434,961	I.	1,197,725 1.8
Total.....	4,126,602,887	3,977,280,048	I.	149,322,839 3.8

The average passenger journey on the Main Line and branches was 22.9 miles, against 23.7 miles in 1882, showing a decrease of 0.8 mile.

The average receipt and cost per unit of traffic were as follows, in cents:

	1883.	1882.	1883.	1882.	1883.	1882.
Per pass.-mile:	1.883	1.883	1.882	1.883	1.883	1.882
Receipt.....	2.448	2.374	2.074	2.041	3.048	3.001
Cost.....	1.640	1.733	1.571	1.573	2.075	1.820
Net.....	0.808	0.641	0.503	0.468	0.973	1.181
Per ton-mile:						
Receipt.....	0.819	0.817	1.471	1.447	0.624	0.615
Cost.....	0.477	0.473	1.167	1.126	0.416	0.430
Net.....	0.342	0.344	0.304	0.321	0.208	0.185

The general result shows in the average passenger rate an increase of 0.048 cent, or 2.1 per cent.; in the cost a decrease of 0.037 cent, or 2.2 per cent., and in the net earnings an increase of 0.085 cent, or 14.5 per cent. Per ton-mile there was an increase of 0.007 cent, or 0.8 per cent., in earnings; an increase of 0.008 cent, or 1.4 per cent., in cost, and a decrease of 0.001 cent, or 0.3 per cent., in net earnings.

The report says: "In connection with the passenger business it may be stated that during 1883 there were handled on the three divisions east of Pittsburgh and Erie 1,774,192 pieces of baggage, as against 1,723,614 in 1882. The entire payments for lost and damaged baggage amounted to \$1,262.

"The number of tons of freight moved over the Main Line and branches, not including 1,265,297 tons of fuel and other materials for the company's use, was 21,674,160 tons; for the previous year, 20,360,399 tons, showing an increase of 1,313,761 tons, or 6.45 per cent. There was an increase of 1,320,730 tons in local freight.

"Of the 21,674,160 tons of individual freight transported over the Main Line and branches, 1,937,850 were through and 19,736,310 local freight.

"The coal shipments increased 1,021,129 tons, and the coke shipments 248,613 tons; their aggregate being 12,426,888 tons, as against 11,157,146 in 1882—a gain of 1,269,742 tons.

"The east-bound coke tonnage from the Connellsville region shows an increase of 184,670 tons, and the west-bound an increase of 145,106 tons; the entire movement of coke from that district amounting to 2,699,826 out of a total of 3,137,400 tons from all sources.

"The total shipments of oil during the year 1883 amounted to 1,756,696 barrels, as against 3,972,121 barrels in 1882, showing a decrease of 2,215,425 barrels.

"On the Main Line the through freight east-bound shows a slight increase, and the through freight west a slight decrease, and the local freight, in both directions, a marked increase.

"The number of passengers on the Main Line shows an increase of 3 per cent.

"On the United Railroads of New Jersey there was an increase in through freight, in both directions, of 138,410 tons, and an increase in local traffic, in both directions, of 475,893 tons, making a total increase of 614,303 tons. The passenger traffic shows an increase of over 5 per cent. in the number carried.

"On the Philadelphia & Erie Division there was an increase of the tonnage of through freight, in both directions, of 37,974 tons, and an increase in local freight westward of 141,473 tons, but a decrease in local freight eastward of 603,865 tons. About one-half of this decrease is due to a reduction in oil traffic; the remainder arises mainly from the fact that the anthracite coal traffic, which formerly passed over two miles of the Philadelphia and Erie road to reach the Northern Central Railway, now reaches that line at Sunbury over your North & West Branch road. The passenger traffic shows a slight decrease in the number carried."

RENEWALS.

"There were built at Altoona 119 locomotives for your Main Line, and 12 for other roads in your interest. There were also constructed at that point 74 passenger cars, 5 postal cars, 1,301 car trust cars, 1,092 freight cars, and 108 cabin and maintenance of way cars for your Main Line, and 37 passenger, baggage and postal cars, and 17 freight and cabin cars for your other lines.

"At the West Philadelphia shops 29 baggage cars were built for the Main Line, and at the Philadelphia & Erie shops 11 locomotives, 3 baggage, 322 freight and 13 cabin and maintenance of way cars were constructed for your roads east of Pittsburgh.

"There were used on the Main Line and branches, in construction and repairs, 20,913 tons of steel rails and 1,353,815 ties; on the Philadelphia & Erie Railroad, 1,332 tons of steel and 171,458 ties, and on the United Railroads of New Jersey, 6,524 tons of steel and 337,933 ties, making a total of 29,369 tons of steel and 1,863,206 ties."

COAL COMPANIES.

The controlled anthracite coal companies show the following results for the year:

	Earnings.	Net earnings.	Net profit or loss.
Susquehanna Coal Co.....	\$4,161,919	\$445,520	P. \$438,151
Summit Branch Co.....	1,535,399	256,913	P. 171,316
Lykens Valley Co.....	774,731	66,982	L. 71,038
Mineral R. R. & M. Co.....	1,566,520	20,445	P. 7,823
Total.....	\$7,978,569	\$655,896	P. \$546,252

* Deficit.

The Susquehanna Coal Co. paid a dividend of 6 per cent. out of its profits for 1883. The four companies together show an increase of 14.7 per cent. in gross earnings, and of 29.3 per cent. in net earnings.

These companies mined last year 2,075,098 tons of coal, an increase of 14.3 per cent., and sold 2,046,899 tons for \$7,816,508, the average price at point of sale being \$3.819, against \$3.754 in 1882, an increase of \$0.065 per ton. Arrangements have been made to still further increase production.

The Pennsylvania Canal earned \$395,218 gross; its expenses were \$303,772, and the net earnings \$191,446, showing a surplus of \$5,886 over the interest charges. The aggregate tonnage was 808,311 tons, a decrease of 7.6 per cent., chiefly in lumber and logs, as the coal tonnage was just about the same as in 1882.

CONTROLLED LINES.

The lines controlled but not operated directly by the com-

pany east of Pittsburgh show the following results, expressed in a condensed form.

	Gross earnings.	Net earnings.	Surplus or deficit over all charges.
Northern Central.....	\$6,088,131	\$2,503,369	S. \$1,023,745
Baltimore & Potomac.....	1,156,420	347,128	S. 73,282
Cumberland Valley.....	871,389	246,922	S. 187,138
Allegheny Valley.....	2,255,943	889,773	S. 876,654
Phila., Wil. & Balt.....	5,741,672	1,073,897	S. 1,089,771
West Jersey.....	1,227,654	441,897	S. 153,363
Camden & Phila. Ferry.....	183,625	62,554	S. 53,106

Out of the surplus above reported the Northern Central paid 8 per cent. dividends; the Cumberland Valley 10 per cent.; the Philadelphia, Wilmington & Baltimore 8 per cent.; and the West Jersey 6 per cent. The figures for the Philadelphia, Wilmington & Baltimore are for the year ending Oct. 31.

The Alexandria & Fredericksburg road continues to be operated by the trustees, with slightly improved results.

The American Steamship Co. shows a further loss as compared with 1882, due to the low rates on ocean freights, and the unsuitability of its vessels to the traffic.

LINES WEST OF PITTSBURGH.

The following statement gives the result of the lines owned or controlled by the company west of Pittsburgh operated by the Pennsylvania Company, and the Pittsburgh, Cincinnati & St. Louis Railway Co:

Gross earnings of lines worked by Pennsylvania Co.....	\$19,147,348
Expenses.....	11,966,298
Net earnings.....	\$7,181,050
Rentals, interest and all charges.....	6,385,846
Net profit on Penna. Co. lines.....	\$795,204
Gross earnings of lines worked by Pitts. C. & St. Louis Co.....	\$7,045,314
Expenses.....	5,141,285
Net earnings.....	\$1,904,049
Rentals, interest and all charges.....	1,875,357
Net profit on all lines worked directly.....	\$823,896

The Pennsylvania Company lines showed a large decrease in net earnings and the Pittsburgh, Cincinnati & St. Louis a small decrease. The latter company, however, had also a considerable decrease in charges.

A comparative statement for two years is as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Gross earnings.....	\$19,147,348	\$19,025,661	I.	\$121,687 0.6
Net earnings.....	7,181,050	8,049,541	D.	868,491 10.8
Net profit.....	795,204	1,869,378	D.	1,074,174 57.5
Pitts. C. & St. Louis:				
Gross earnings.....	\$7,045,314	\$6,660,690	I.	\$384,624 5.8
Net earnings.....	1,904,049	1,965,931	D.	61,882 3.2
Net profit or loss.....	P. 28,692	L. 5,566		

Both companies: Net profit..... \$823,896 \$1,863,812 D. 1,039,916 55.8

Differences between the figures given for 1882 above and in the following statement, and those stated in the last report are due to the fact that the results of the Chicago, St. Louis & Pittsburgh Railway (formerly Columbus, Chicago & Indiana Central) were included in 1882 in the operations of lines directly operated, and in 1883 in the operations of those worked by their own organizations.

The other lines west of Pittsburgh, in connection with which the company has assumed liabilities or which it controls through the ownership of securities, but which are worked through their own individual organizations, are the Chicago, St. Louis & Pittsburgh Railroad; St. Louis, Vandalia & Terre Haute Railroad; Grand Rapids & Indiana Railroad and roads operated through its organization, and East St. Louis & Carondelet Railway. The operations of these lines were as follows:

	1883.	1882.
Gross earnings of these roads.....	\$9,394,963	\$9,044,712
Expenses.....	7,864,955	7,997,550
Net earnings.....	\$2,069,668	\$1,947,153
Rentals and interest.....	2,187,835	1,909,965
Profit or loss.....	L. \$118,167	P. \$37,188
This company's proportion.....	L. 11,227	P. 30,488
Profit above stated.....	\$23,896	\$1,633,812
Net profit on all lines.....	\$812,669	\$1,894,300

This shows a decrease in the net profit on all lines west of Pittsburgh of \$1,081,631, or 57.1 per cent. The difference between the net profit above and the balance shown by the income accounts of the Pennsylvania Company and the Pittsburgh, Cincinnati & St. Louis Co. is due to the fact that the actual advances made during the year were \$6,318 more than the losses shown by the operations of the roads.

The traffic of all the lines west of Pittsburgh was as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Passengers carried.....	12,262,376	11,611,639	I.	650,737 5.6
Passenger-miles.....	369,774,204	369,349,919	I.	424,285 0.7
Tons freight carried.....	26,319,047	24,977,807	I.	1,341,240 5.4
Ton-miles.....	2,693,140,873	2,729,844,763	D.	36,703,890 1.3

These figures indicate a gain in local traffic and a falling off in through business, both in freight and passengers.

GENERAL RESULTS WEST OF PITTSBURGH.

"Your lines west of Pittsburgh show a continued increase in gross earnings, but, owing to the competitive character of the traffic, there is a larger ratio of expenses and a reduction in net revenue. The expenses in many instances are exceptional in their character, and tend to bring the properties to a higher standard of efficiency, both in roadway and equipment; but this is necessary by reason of the severe competition resulting from the construction of new lines. Your board have reason, notwithstanding this, to expect satisfactory results from these properties.

"The freight movement shows a gain of 1,341,240 tons, and the number of passengers carried an increase of 650,737, or about 5 per cent. in each class of traffic.

"The Pennsylvania Company, after meeting all its obligations, was able to pay a dividend of 4 per cent., and carry to the credit of profit and loss a surplus of \$72,829.

"Of the issue of \$3,200,000 of the Pennsylvania Company's bonds, secured by Pittsburgh, Fort Wayne & Chicago stock as collateral, \$630,000 have been redeemed through the operation of the sinking fund, leaving the amount outstanding \$2,570,000. Of the \$12,500,000 of its 4½ per cent. bonds, \$281,000 have been redeemed, leaving outstanding \$12,219,000.

"The report made by the trustees of the sinking funds of the first and second mortgages of the Pittsburgh, Fort Wayne & Chicago Railway Co. shows that the regular annual contribution of \$104,100 was paid to the trustees of these mortgages. They redeemed during the year \$126,000 of the first mortgage, and \$108,000 of the second mortgage bonds, making the total amount redeemed to Dec. 31, 1883: First mortgage bonds, \$1,463,500; second mortgage bonds, \$1,695,500; with a balance of cash in the hands of the trustees uninvested Dec. 31, 1883: On account of first mortgage sinking fund, \$227,722; on account of second mortgage sinking fund, \$131,108.

"The further sum of \$101,921 was also paid into the sinking funds provided for the redemption of the existing mort-

gages on the other leased lines west of Pittsburgh in addition to the amounts contributed directly by the individual companies.

The Grand Rapids & Indiana Railroad shows increased revenues for the year, with a surplus after meeting all fixed charges. The Land Department made sales of 22,650 acres, almost entirely farm lands, for \$225,040, being an average of \$9.94 per acre. The entire amount sold to the close of the year, after deducting canceled contracts, was 393,439 acres, and the aggregate price received therefor was \$4,827,411, an average of \$12.27 per acre. Out of the proceeds of such sales the trustees redeemed during the year \$1,340,000 of the first mortgage bonds of the company, of which \$1,242,000 were converted into income bonds, making the entire amount so exchanged to the end of 1883 \$2,339,000.

"The assets on hand Dec. 31, 1883, applicable to the redemption of the first mortgage bonds, were \$981,885, including \$376,323 cash and \$605,562 bills receivable.

"For the proper protection of the large advances made under the contract which expired Jan. 1, 1883, for the purchase of coupons, your company deemed it wise to take the necessary legal steps to determine the priority of its claim as the owner of such coupons, upon the revenues of the Grand Rapids & Indiana Railroad Co. This suit is now pending; it is hoped it will result favorably to your company and secure a proper settlement of this account.

"The condition of your western lines was fully maintained. The road-bed was improved by ballasting additional sections with stone and cinder, by renewal and substitution of iron for wooden bridges and by the further substitution of steel for iron rails. Extensions were made of the third and fourth tracks and additional second tracks and sidings provided at various points. Large sums were expended in furnishing increased yard, dock and station facilities and in the purchase of additional real estate at terminal points. The policy of substituting heavier and more effective motive power was continued and your car equipment further increased.

"During the year there were laid on the northwestern lines operated directly in your interest 9,914 tons, and on the southwestern lines 11,419 tons of steel rails.

The amount expended during the year in betterments on the lines west of Pittsburgh, was \$1,929,405.75 To which add the balance at the close of the last annual report..... 2,125,896.81

Total..... \$4,055,302.56 On account of which there were received in 1883..... 2,066,160.39

Leaving a balance due in general account of..... \$2,049,142.17

"As stated in the last annual report, the property of the Columbus, Chicago & Indiana Central Railway Co. was sold under foreclosure proceedings on Jan. 10, 1883, and a reorganization effected on April 1, 1883, under the name of the Chicago, St. Louis & Pittsburgh Railroad Co. The long and vexatious litigation attendant upon the lease of that road was thus brought to a termination, and your western lines relieved of what had hitherto been an onerous obligation, and one which, if the final adjudication had sustained the lease, would in all probability have seriously affected their revenues.

"Your board thought it advisable, for the proper protection of your interests, to become, in connection with your western lines, the owners of a portion of the securities of the new company, so that there is now held in your interest \$11,500,000 of the first mortgage 5 per cent. bonds, 117,212½ shares of the preferred stock, and 14,242½ shares of the common stock, of the par value of \$100 per share. The net earnings of this line for 1883 were not quite sufficient to meet its fixed charges, but it is believed that when the improvements now in progress are completed, and the property brought into a thoroughly effective condition, it will be able to make a fair return upon the capital invested."

SUMMARY OF ALL LINES.

The passenger traffic of all the lines for the year was as follows:

	1883.	1882.
Pass. carried. Pass.-miles.		
East of Pitts. 36,584,435	789,134,935	33,657,024
West of Pitts. 12,262,376	366,774,204	11,611,639
Total.....	48,846,811	1,155,909,139

This shows an increase of 7.9 per cent. in passengers carried, and of 3.4 per cent. in passenger-miles.

The freight traffic of all the lines was as follows:

	1883.	1882.
Tons carried. Ton-miles.		
East of Pitts. 37,379,115	5,066,083,175	54,822,558
West of Pitts. 26,319,047	2,693,140,873	24,977,807
Total.....	63,698,162	7,759,224,048

The total increase in the tons carried was 5.0 per cent.; in ton-miles, 15.4 per cent.

The earnings of all the lines owned and controlled east and west of Pittsburgh were as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Gross earnings.....	\$105,653,532	\$101,514,926	I.	\$4,138,606 4.1
Gross expenses.....	68,917,056	65,385,714	I.	3,531,342 5.4
Net earnings.....	\$36,736,476	\$36,129,212	I.	\$607,264 1.7
Per cent. of exps.....	65.23	64.41		0.82

Expenses above include only working expenses and not interest, rentals or dividends of any kind.

The aggregate amount of steel rails laid in 1883 on all the lines owned, controlled, or operated by the company east and west of Pittsburgh was 67,864 tons.

TRUST FUND.

The report of the managers of the trust for the purchase of guaranteed securities, created Oct. 9, 1878, is as follows up to Dec. 31, 1883:

Cash received from Pennsylvania R. R. Co.....	\$3,100,000.00
Interest received.....	545,551.25
Total.....	\$3,645,551.25
Cash paid for securities.....	\$3,643,208.27
Expenses of the trust.....	2,273.52
Total.....	\$3,645,481.79

Cash on deposit, Dec. 31, 1882..... \$69.46

During 1883 the regular cash payment of \$600,000 was received from the company. The securities held by the trust, all bonds or stocks of which the principal, interest or dividends are guaranteed by the Pennsylvania Railroad Co., have a par value of \$3,568,750, the cost, as shown above, having been \$3,643,208.27. The interest and dividends on these securities are paid into the fund.

INSURANCE FUND.

The statement of the insurance fund for the year is as follows:

Cash, Dec. 31, 1882.....	\$712.27
Premiums, interest, etc.....	254,001.22
Total receipts.....	\$254,713.49
Premiums paid.....	\$14,400.18
Losses from fire.....	125,833.00
Sundry expenses.....	1,229.12
Purchase of securities.....	80,875.00
Total.....	\$222,357.30

Cash, Dec. 31, 1883..... \$32,356.19

The assets of the fund include securities having a par value

GENERAL ACCOUNT, PENNSYLVANIA RAILROAD CO.

		DURING YEAR 1883.	
		Increase.	Decrease.
<i>Liabilities:</i>			
To capital stock.....		\$92,619,750.00	\$7,318,450.00
To first-mortgage bonds, due 1880 (outstanding).....	\$10,000.00		
To general mortgage bonds, due 1910.....	19,999,760.00		
To consolidated mortgage bonds, due 1905.....	27,760,390.00		\$280,860.00
To consolidated mortgage bonds, due 1919.....	5,000,000.00		
To Navy-Yard mortgage registered bonds, due 1901.....	1,000,000.00		
To collateral trust loan, due 1913.....	3,000,000.00	3,000,000.00	
To lien of the state upon the public works between Philadelphia and Pittsburgh, bearing 5 per cent. interest, payable in annual installments of \$400,000, applicable, first, to the interest, and the remainder to principal, the original amount of which was \$7,500,000.....	2,976,002.86		299,907.06
To mortgages and ground-rents payable.....	1,824,027.47		74,000.00
To Pennsylvania Co. for Insurances on Lives and Granting Annuities, "Trust certificates".....		9,143,000.00	
Accounts payable, viz.:			428,000.00
To passenger balances due other roads.....	\$584,476.73		68,042.56
To pay-rolls and vouchers for Dec., 1883, due in Jan., 1884.....	4,399,055.86		13,521.72
To cash, dividend due to stockholders unpaid.....	61,589.75		34,797.00
To dividend scrip of Dec., 1873, outstanding.....	943.61		
To dividend scrip of May and Nov., 1880, outstanding.....	292.00		404.50
To dividend scrip of Nov., 1882, outstanding.....	148.00		428,528.00
To dividend scrip of May and Nov., 1883, outstanding.....	329,007.00		
To sundry accounts due other roads, etc.....	11,374,118.96	6,742,015.36	
	16,749,601.91		
To appraised value of securities owned by the United New Jersey Railroad & Canal Co., and transferred with the lease of the works of that company.....		3,859,294.60	36,290.00
To equipment of road and canal owned by the United New Jersey Railroad & Canal Co., and transferred with the lease of the works of that company.....		2,267,004.53	412,300.00
To fund for the purchase of securities guaranteed by the Pennsylvania Railroad Co., under trust created Oct. 9, 1878.....	\$3,100,000.00		600,000.00
To 1,529 consolidated mortgage bonds redeemed and cancelled.....	1,489,610.00		280,860.00
To balance to credit of profit and loss.....	13,613,184.03		1,418,544.62
		18,202,791.03	
		\$204,411,625.40	\$19,688,876.98
			2,076,650.84
Less amount of decrease.....			
Total amount of increase.....			\$17,612,226.14
<i>Assets:</i>			
By balance standing on the books of the company for the construction of the railroad between Philadelphia and Pittsburgh, including the original cost of the Philadelphia & Columbia Railroad (\$5,375,733.43); also, the branches to Indiana, Hollidaysburg, and Morrison's Cove; also, the branch to connect with the Pittsburgh, Virginia & Charleston Railroad and branch at Tyrone; also, bridge over the Susquehanna River at Columbia, and branches from Columbia to York, and Frazer to Woodland, comprising 1,219.62 miles of single track (exclusive of the Harrisburg & Lancaster Railroad, 93.70 miles), and including wharves and grain elevator, and cost of stations, warehouses and shops.....	\$37,975,075.40		\$735,534.55
By balance to debit of equipment of road, consisting of 1,146 locomotives, 825 passenger cars, 213 baggage, mail and express cars, 25,061 freight cars and 2,195 road cars, including shop machinery, steamboats and car-floats, and also including equipment of canal, consisting of schooners, barges and tugs.....	23,595,949.07		1,645,377.31
By cost of real estate of the company and telegraph line.....	12,341,820.66		273,995.03
Total amount charged to construction, equipment and real estate accounts, including sidings, stations, warehouses, shops and shop machinery, telegraph lines, canal equipment, etc., etc.....		\$73,912,854.73	
<i>Other Assets:</i>			
By cost of bonds of railroad corporations.....	\$30,160,691.51		8,793,404.69
By cost of capital stocks of railroad corporations.....	58,568,559.64		3,916,781.51
By cost of bonds and stocks of other corporations, coal companies, canal companies, bridge companies, and investments not otherwise enumerated.....	6,602,464.58		1,583,861.09
Total cost of bonds and stocks belonging to the company.....		95,331,715.73	
By managers of trust created by Pennsylvania Railroad Co., Oct. 9, 1878.....		3,100,000.00	600,000.00
By freight balances due by other roads.....		107,434.22	107,434.22
By insurance fund.....		10,000.00	
By mortgage and ground-rents receivable.....		57,650.00	12,273.20
By amount expended for the purchase of anthracite coal lands, Hazleton, Hamilton, Eastwick and other tracts.....		709,336.24	12,097.46
By appraised value of securities owned by the United New Jersey Railroad & Canal Co., and transferred with the lease of the works of that company.....		3,859,294.60	36,290.00
By equipment of road and canal owned by the United New Jersey Railroad & Canal Co., and transferred with the lease of the works of that company.....		2,267,004.53	412,300.00
By amount of fuel and materials on hand for repairs to locomotives, cars and maintenance of way, viz.:			
For the Pennsylvania Railroad.....	\$2,584,201.46		299,461.75
For the United New Jersey Railroad & Canal.....	1,101,504.52		94,872.16
For the Philadelphia & Erie Railroad.....	277,750.89		33,810.61
		3,963,456.87	
By amount of bills and accounts receivable, and amounts due from other roads, including advances made to railroad corporations for construction, and purchase of equipment used on their lines, viz.:			
United New Jersey Railroad & Canal construction.....	\$1,064,818.51		322,469.93
United New Jersey Railroad & Canal sinking fund and redemption account.....	1,350,440.00		14,680.00
United New Jersey Railroad & Canal real estate.....	600,144.43		133,794.73
Philadelphia & Trenton Railroad construction.....	611,894.68		370,782.54
Philadelphia & Trenton Railroad real estate.....	108,195.62		63,861.02
Other companies.....	8,457,584.47		2,982,844.41
		12,193,077.71	
By cash, balance in hands of the Joint Stock Bank, London, and other parties, to pay coupons due in Jan., 1884.....		1,135,697.31	16,021.24
By cash, balance in hands of freight and passenger agents, etc.....	\$2,064,651.22		280,432.48
By cash, balance in hands of Treasurer.....	5,699,452.24		3,300,815.40
		7,764,103.40	
		\$204,411,625.40	\$21,830,210.78
			4,217,984.04
Less amount of decrease.....			
Total amount of increase.....			\$17,612,226.14

of \$1,199,700, valued in the accounts at \$1,113,050. The assets, including cash on hand, show an increase of \$112,413.93 during the year.

GENERAL REMARKS.

"Under the provisions of the trust created Oct. 9, 1878, as will be seen by the report hereto attached, there has been paid to Dec. 31, 1883, the sum of \$3,100,000, which, with the income therefrom, has been invested in securities amounting at par to \$3,643,208, yielding an interest of 6.786 per cent. per annum upon the investment.

"The statement of the insurance fund, also attached, shows assets on hand, at the end of the year, of \$1,145,406, being an increase over the previous year of \$112,414.

"During the past year a controlling interest was acquired by your company in the Camden & Atlantic Railroad, extending from Camden to Atlantic City, a distance of 59 miles, and possessing valuable terminal facilities in Camden, and ferry privileges connected therewith. A majority of the share capital of the West Jersey Ferry Co. was also secured in your interest. These acquisitions will tend to give the public better accommodations than they have had in the past, and will promote and protect your general interests in the state of New Jersey.

"The Pennsylvania Railroad Co. having purchased \$375,000 of the 7 per cent. bonds of the Pemberton & New York Railroad Co., which were guaranteed, principal and interest, by the United Railroad & Canal Co. of New Jersey, it was deemed advisable to effect a consolidation of that road

with the Philadelphia & Long Branch Railway, and thus vest in one corporation the ownership of the lines extending from Pemberton Junction, the terminus of the Camden & Burlington County Railroad, to the New York & Long Branch Railroad near Bay Head, in New Jersey. This was effected Oct. 13, 1883, under the name of the Philadelphia & Long Branch Railroad Co. The capital stock of the new corporation was fixed at \$900,000, with an equal amount of 5 per cent. first mortgage bonds; of these securities your company received \$750,000 of capital stock and \$750,000 of bonds in settlement of their interests in the lines thus consolidated.

"The agreement with the Central Railroad of New Jersey for the joint use of the line between Bay Head City and Perth Amboy, known as the New York & Long Branch Railroad, to which reference was made in the 35th annual report, was found to be quite satisfactory in furnishing increased facilities to the public, and in promoting the joint interests of the contracting parties. The change in the management of the New Jersey Central road, which occurred in May last, resulted, however, in a notice that that company would no longer be bound by the agreement, although it was not pretended that your company had failed in any manner to carry out the covenants which it had assumed in connection therewith. It is believed that through the suit which your company was thus compelled to bring for the protection of its rights, the contract will be adjudged to be in full force and effect.

"The principal outlay upon your main and leased lines

during the past year was for extensions of third and fourth tracks and additional yard facilities. The large expenditure made at Harrisburg for this purpose has afforded much relief in the movement of traffic, but, owing to delays in the acquisition of the necessary property for the new passenger station at that point, its construction has not been commenced.

"Additional right of way was acquired at various points, and the sum of \$275,000 expended for real estate.

"On the New York Division further progress was made in the extension of third and fourth tracks, and in the improvement of the line at Frankford and Bristol. The new passenger line over the Hackensack River, which was exceptionally expensive in its character, is nearly completed and will be opened this spring. It will materially expedite the movement of traffic, as it affords the passenger trains an independent line from East Newark to Jersey City. There was also an extension of third and fourth tracks on the Connecting Railway in the work upon the New Jersey Division.

"The equipment, in addition to that obtained through the system of car trusts, has been increased by 104 locomotives and 64 passenger and postal cars.

"The policy that was indicated in the last report in reference to the construction and promotion of branch lines has been continued and much the larger portion of the capital outlay was for this purpose. Nearly \$1,300,000 were expended in extending branch and auxiliary lines that were in operation at the beginning of the year, and \$4,770,000 upon lines not yet opened for traffic. The results obtained from such investments in increasing the revenues of your properties will be apparent upon an examination of the sources and character of your traffic.

"Among the more important branch lines in operation at the beginning of the year that shared in this expenditure were the Tyrone & Clearfield Railway, your largest bituminous coal feeder; the Southwest Pennsylvania Railway, from which your coke shipments are mainly derived, and the Pittsburgh, Virginia & Charleston Railway. The latter road is now developing a traffic that enables that company not only to take care of its fixed liabilities, but gives fair prospects of reasonable dividends to its shareholders.

"On the Western Pennsylvania Railroad there were expended \$523,000 in reducing the grades and extending the line to Bolivar. This work has so far progressed as to make further outlay unnecessary for the present, and it is now being brought into service as a low-grade line from Pittsburgh to the western slope of the Allegheny Mountains. The completion of the West Penn & Shenango Connecting Railroad, extending from the terminus of the Butler Branch of this road to the Shenango & Allegheny Railroad, a distance of about 24 miles, affords a direct outlet to the lakes for the coal and other traffic of the Western Pennsylvania road and also gives the section adjacent to the new line a more favorable connection with Pittsburgh. It is hoped that the construction of this line will be of advantage, not only to its promoters, but to the interests of the Western Pennsylvania Railroad.

"The Ridgway & Clearfield Railroad, alluded to in the last annual report, was opened for business at the close of the year. It will develop a new bituminous coal region and afford additional traffic to your lines.

"The construction of the Philadelphia, Germantown & Chestnut Hill Branch has been vigorously prosecuted, and it is expected the line will be completed by the middle of the year. The branch line extending from Frazer, on the Main Line, to Phoenixville, was finished, thus bringing this important manufacturing town in direct connection with your system of railroads. The line traversing the Schuylkill Valley known as the Pennsylvania Schuylkill Valley Railroad has been actively pushed forward, and will be ready for traffic as far as Reading during the coming season. Your management sees no reason for changing the views expressed in the last report as to the necessity for the construction of this line, and the important influence it will have, not only in adding to the revenues of your properties, but in protecting your interests.

"The Philadelphia, Wilmington & Baltimore Railroad Co. shared in the general prosperity of the railway interests during the past year; its net revenues provided for its fixed liabilities and the customary dividend of 8 per cent., with a continued increment to the credit of profit and loss. The completion by the Baltimore & Potomac Railroad Co. of its double track between Baltimore and Washington has strengthened the position of the Philadelphia, Wilmington & Baltimore Railroad and largely increased the facilities for the transportation of passengers and freight between Washington and northern points.

"Your company has joined the Philadelphia, Wilmington & Baltimore Railroad Co. in a traffic contract, to promote the construction of a railroad about 100 miles long, extending from the southern end of its Delaware line to the southern extremity of the peninsula of Virginia, opposite Norfolk. It is expected that this route, through its directness and ability to shorten the time, will secure a large share of the traffic which now seeks the more northern ports by water, and will thus largely benefit the Philadelphia, Wilmington & Baltimore Railroad, as well as your other lines.

"The Northern Central Railway Co. has been especially prosperous during the year, and is now in such condition as to give good assurance of a continuance of direct profits to your company as its largest shareholder, as well as indirect advantages to your general system.

"The pooling arrangements between the trunk lines, while, to a certain extent, protecting your revenues on through traffic, have not yielded the full benefit that was anticipated when they were made. The construction of new through routes has been carried to an extent far in advance of the actual necessities of the country, and the result has been that the lines having inferior facilities have been unable to attract business except at unremunerative rates, while the undue volume of business thus obtained by such lines has been used as the basis for securing an unfair proportion of the pooled traffic. While your board are fully convinced of the advantages to both the public and the transportation companies of a proper pooling system, in the maintenance of fair and equitable rates, and in preventing discriminations between shippers, they are also satisfied that the requisite stability cannot be attained until more efficacious means are provided to enforce the agreements made between the competing lines; and, unless this is done, it is doubtful whether the interests of your company will be promoted by a further continuance of the imperfect arrangements that now exist.

"Since your last annual meeting your company has lost the services of Mr. Stirkland Kneass, an eminent civil engineer, who filled the position of Assistant to the President, whose death occurred Jan. 14 last. Mr. Kneass had been connected with the original construction of your Main Line, and had for many years occupied various positions of trust connected with your company. The directors, while bearing testimony to the zeal and ability with which all of his duties were discharged, desire to express their appreciation of his long and faithful service, and their deep sense of the loss sustained by the company.

"The board renew their acknowledgments to the officers and employees for the fidelity and efficiency with which they have discharged their duties during the past year."



Published Every Friday.

EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Mr. Arthur M. Wellington, C. E., late Assistant General Manager of the Mexican Central Railway, is engaged on the editorial staff of the Railroad Gazette.

THE DISTRIBUTION OF THE CHICAGO POOL SHIPMENTS.

Rates from the West to the East have been more or less demoralized since Christmas, at least. Sometimes cutting rates has been quite general, and there were nine days of an open 20-cent rate in January, tried as a remedy. It did not succeed. On the contrary, the distribution of the Chicago shipments has been much more irregular since the time of the 20-cent rate than it was before. Perhaps the cutting has not been so general, and possibly there has been less of it at Chicago. Complaint was made that the cutting went on at other places to such an extent as to prevent shipments from Chicago; but this is not confirmed by the movement of freight, except perhaps in one or two weeks. The receipts of grain at Chicago have seldom been so large a proportion of the total Western grain receipts in winter as during the past two months; and in the first week of this year Peoria had an unusually large portion only in the week ending Feb. 23, when it was 15.4 per cent. of the whole. Published reports of shipments are not complete enough to show just how the different markets have fared; but no great diversion of shipments can be made without soon affecting receipts, especially when the Chicago elevators are as full as they have been this winter. When storage is lacking, and shipments are necessarily made directly to the East, then there is likely to be a considerable change in the course of the shipments. And the fact that this year comparatively a small part of the shipments have gone through to the seaboard is likely to still further to have changed their course. Nevertheless, east-bound rates certainly have been irregular this winter, and the reports of shipments from Chicago in several January and February weeks show the Chicago & Grand Trunk, or the Nickel Plate, or both, carrying an enormous proportion of them—in one week together nearly half of the total shipments and 24 times the percentage allotted them.

The report to the Board of Trade for last week (ending March 1) shows a cessation of the great diversion of shipments to these two roads, however, and though this report does not give the actual course of the through shipments, it indicates them approximately, and as their great percentages were previously declining we may take it as an indication that this irregularity, which has greatly disturbed the winter business, has approached an end.

In order to see how the course of shipments has been affected by these irregularities we give below a table showing the percentage of the through Chicago shipments eastward carried by each railroad in each of the last eight weeks, the last week being from the imper-

fect Board of Trade report, the others from the complete reports:

	Jan. 13.	Jan. 19.	Jan. 26.	Feb. 2.	Feb. 9.	Feb. 16.	Feb. 23.	March 1.
C. & G. T.	10.7	8.8	17.1	29.3	20.4	20.9	17.7	10.5
Mich. Cen.	17.8	14.8	12.4	11.6	11.4	12.1	15.6	18.5
Lake Shore	19.5	17.9	18.8	17.4	15.4	15.3	13.3	17.8
Nickel Plate	7.7	8.6	4.2	9.0	28.5	21.4	17.3	10.7
Fort Wayne	16.7	18.5	16.4	14.2	10.0	12.0	15.6	10.7
C. St. L. & P.	15.4	16.8	15.5	5.6	8.1	3.3	3.7	5.7
Balt. & Ohio	3.4	5.1	6.6	4.1	3.5	6.9	7.8	10.0
Ch. & At.	8.8	9.7	9.0	8.8	7.7	8.1	9.0	16.1

Previous to Jan. 20 we see that the Grand Trunk had taken a little less than its share, but then for five weeks it took a great deal more. In these same five weeks the Michigan Central took much less than its share, and in none of these weeks did it carry its full proportion. The Lake Shore also has carried less than its share in three of the eight weeks. The course of the Nickel Plate was not remarkable in the first four and the last one of the weeks, but it was decidedly so in the three weeks beginning Feb. 3 and ending Feb. 23, and the remarkable leap forward it made from 9 to 28½ per cent. of the whole in one week and from 1,716 tons in the week ending Jan. 26 and 3,601 tons in the following week to 11,905 tons in the week ending Feb. 9, was evidently caused by special efforts. But so far as these figures go they indicate that the contracts, rebates or other methods by which exceptional shipments are secured were first applied on the Chicago & Grand Trunk in the week to Jan. 26, doubling its business then, and in the following week making its share 3½ times as great as in the week ending Jan. 19. The Fort Wayne did not secure its allotted share in any of these weeks, but the other Pennsylvania road, which however carries (or did until recently) more for the Erie than for the Pennsylvania, had nearly twice its share in the first three weeks, but fell far below it when the Grand Trunk and the Nickel Plate began to secure an undue share of the traffic. Meanwhile, in all these weeks until last week the Chicago & Atlantic has carried less than the share awarded it.

It is noticeable that for four weeks the percentage by the Chicago & Grand Trunk, and for three weeks that by the Nickel Plate, has been decreasing, and last week, according to the incomplete report to the Board of Trade, the former carried less than its share, the former not much more. This is in accordance with the statement that the contracts at less than full rates made by these companies were for limited quantities, which would soon be worked off; but the complete report may make a somewhat different showing.

How different these recent percentages were from those which the roads have carried for some months previously may be judged from the following statement, which shows the percentage carried by each railroad in each of the last five months of 1883, and, in the last column, the percentage carried by each during the whole period of five weeks from Jan. 20 to Feb. 23 last, in all of which the Chicago & Grand Trunk and in the last three of which the Nickel Plate also were carrying an exceptionally large share of the total shipments:

	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. 20 to Feb. 23.
C. & G. T.	11.6	8.6	10.0	11.5	13.6	21.0
Mich. Cen.	12.8	14.1	20.6	18.8	18.4	12.7
Lake Shore	15.7	15.1	12.7	11.5	15.8	16.0
Nickel Plate	4.5	9.7	10.3	7.9	8.2	16.0
Fort Wayne	21.4	21.1	21.4	20.3	16.6	13.7
C. St. L. & P.	14.3	9.0	7.5	12.6	12.2	6.2
Balt. & Ohio	7.2	7.7	7.7	5.3	4.0	5.8
Chic. & At.	12.5	14.7	9.8	12.4	11.2	8.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Here we see that the Chicago Grand Trunk only fairly held its own after July last year, when there was great complaint of cutting by the Erie freight lines, but in the five weeks beginning Jan. 20 it took nearly twice as large a share of the business; the Nickel Plate shows a somewhat similar course in 1883, and also took twice its share in the recent five weeks; the Fort Wayne held a pretty steady percentage till December, but in the five weeks this year carried a percentage one-third smaller than in the four months ending with November. The other Pennsylvania road, the Chicago, St. Louis & Pittsburgh, fell off rapidly from August to October, but recovered in November and December, carrying then one-half more than its share; in the five recent weeks its percentage was but about half as great; the Chicago & Atlantic, which, except in October, had kept pretty well ahead of its allotted percentage, fell below it in the recent weeks; still the gains of the Chicago & Grand Trunk and the Nickel Plate were taken chiefly from the two Pennsylvania roads, which together carried less than 20 per cent. of the Chicago shipments in these five weeks. The two older Vanderbilt roads chiefly felt the effect of the exceptionally large Erie shipments (by the Chicago, St. Louis & Pittsburgh as well as the Chicago & Atlantic), in the summer and fall months, but they lost too while the

Grand Trunk and Nickel Plate were gaining, and then (during the recent five weeks) together carried but 28.7 per cent. of the whole, though allotted over 35 per cent., which is a smaller share than they have carried since August. Taking the three Vanderbilt and the two Pennsylvania roads together, we find their percentages to have been:

	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. 20 to Feb. 23.
Vanderbilt	33.0	38.9	43.6	37.9	42.7	44.7
Pennsylvania	35.7	30.1	28.0	32.9	28.2	19.0
The five	68.7	69.0	72.5	70.8	70.9	64.0

By the last published award, which was changed slightly by the arbitrators, the Vanderbilt roads were to have 48½ per cent. of the whole and the Pennsylvania roads 27½—together 71 per cent. In only one month, October, have they reached this percentage, and in no month after July last year did the Vanderbilt roads carry their share; but they slightly exceeded it in the five recent weeks.

The Board of Trade report for the last week of February, as we have seen, indicates that the period of irregular rates closed the week before—for the time. All the efforts made to get the advantage of one another seem to have resulted in putting no line except the Chicago & Grand Trunk far ahead of the position allotted it, but the chief effect has been a material reduction in the average rates received during the winter.

JANUARY EARNINGS.

The table of railroad earnings in January which we publish on another page has reports from 73 railroads, which in the aggregate make the following statement:

	1884.	1883.	Inc. or Dec.	P. c.
Miles worked	50,570	45,842	4,728	10.3
Earnings	\$22,731,291	\$22,703,054	+\$28,237	0.1
Earnings per mile	450	495	45	8.1

Thus, with an increase of 4,728 miles (10½ per cent.) in the mileage worked, there was scarcely any increase in gross earnings, so that the earnings per mile were smaller by 9 per cent.—a much greater reduction than there has been for a long time.

Of the 73 roads reporting 35 had a decrease in total earnings, and 48 a decrease in earnings per mile last January. There are very few very large gains, except by roads which have a large increase in mileage; but there are several important decreases.

The four roads northwest of St. Paul, two of which have a very large increase in mileage, in the aggregate worked 44½ per cent. more road than in 1883, and earned 18½ per cent. more money, and their average per mile decreased from the very small sum of \$275 to the still smaller sum of \$225, 18 per cent., the Canadian Pacific earning but \$134 per mile.

Of the railroads of the Far West which are further south only the Central Pacific and the Denver & Rio Grande have reported, and the figures are still wanting for the Atchison, Topeka & Santa Fe and the Union Pacific. The Central Pacific with 5.2 per cent. less road earned 9.4 per cent. less money, its earnings per mile falling from \$552 to \$527; with 264 more miles of road the Denver & Rio Grande earned \$26,400 more money, and its earnings per mile fell from \$341 to \$283.

Twelve other roads west and northwest of Chicago report the following result:

	1884.	1883.	Increase.	P. c.
Miles worked	13,478	12,742	736	5.8
Earnings	\$4,652,844	\$4,203,537	\$350,307	8.4
Earnings per mile	345	338	7	2.1

All these roads show an increase in total earnings over last year, when most of them suffered greatly from snow; and all but three had large earnings per mile this year. There are very large gains on three roads, but two of these, the Des Moines & Fort Dodge and the Green Bay, Winona & St. Paul, still have extremely light earnings, and the Wisconsin Central, which gained 81 per cent., has not large ones. In fact, only one of these 12 roads—the Chicago & Alton—has as much as the average earnings per mile of the 73 roads reporting for January, and its were twice as great as those of the Northwestern, which stood next. The Marquette, Houghton & Ontonagon, which in a summer month has earned more than \$2,500 per mile, last January earned but \$191.

That the gains this year did not give these roads large earnings may be seen by the following statement of the January earnings in each of the last three years of the nine roads which reported last year:

	1884.	1883.	1882.
Miles worked	12,817	12,087	10,854
Earnings	\$4,484,688	\$4,161,085	\$4,587,764
Earn. per mile	350	344	423

Thus, though there is a considerable gain over last year, the nine roads, working 1,903 more miles than in 1882, earned \$108,076 less money, and their average earnings per mile fell off 17 per cent. in the two years. Ten of these roads have reported earnings for each

of the last four months, and their aggregate increase has been:

October.	November.	December.	January.
\$643,408	\$726,909	\$311,026	\$324,088

Their aggregate earnings have decreased greatly, however, since October, and have been as follows:

October.	November.	December.	January.
\$7,757,268	\$6,949,143	\$5,807,906	\$4,504,326

Thus their earnings were 42 per cent. less in January than in October. There is always a large decrease from October to January; it has been somewhat larger than usual this year, but only about the same as last year, when, however, the bad weather in January had much to do with it.

The group west and southwest of St. Louis is deprived of most of the significance it has had heretofore because the whole immense Missouri Pacific system—including six different railroads, with an aggregate of very nearly 6,000 miles of road—has ceased to report. The seven that remain have but 2,226 miles of road. Three of them report an increase in earnings, but only two an increase in earnings per mile—the Fort Scott & Gulf, 15 per cent.; the St. Louis & San Francisco, 11 per cent. The Gulf, Colorado & Santa Fe lost 28 per cent. (in earnings per mile); the Little Rock & Fort Smith 19, and the Little Rock, Mississippi River & Texas 15½ per cent. Altogether, what there is left of this group, with 7½ per cent. more miles of road, earned 4½ per cent. more money than last year, and their average earnings fell from \$350 to \$340. Judging from the St. Louis & San Francisco and the Fort Scott & Gulf, that part of the Missouri Pacific system which is in Missouri and Kansas did very well last January; judging from the four roads further south (which form too slight a basis for a safe judgment) the larger part of them in Arkansas, Indian Territory and Texas did not do well, and in view of the light crops there and the extraordinary ones the year before they could not be expected to do as well as last year.

The 17 roads north of the Ohio that report show aggregates as follows:

1884.	1883.	Inc. or dec.	P. c.
Miles worked.....	8,404	+ 402	6.3
Earnings.....	\$2,502,764	\$2,893,771	-\$331,007 11.4
Earn. per mile.....	377	452	- 75 16.7

Only 5 of these 17 roads show an increase in total earnings, and only two (the Cincinnati, Indianapolis, St. Louis & Chicago and the Peoria, Decatur & Evansville) have any increase in earnings, per mile and the increase of the latter is not equal to its decrease in 1883. And, indeed, many of these roads did not make a good showing last year. Of the 16 that reported then seven earned less than in 1882, and the aggregates of the 16 in January for three years have been:

	1884.	1883.	1882.
Miles worked.....	6,520	6,118	5,981
Earnings.....	\$2,428,904	\$2,742,918	\$2,608,596
Earnings per mile.....	376	448	436

Thus in spite of an increase of 539 miles of road (9 per cent.) since 1882, these roads have suffered a decrease of \$179,602 (7 per cent.) in earnings, and the decrease in earnings per mile is no less than 13½ per cent. since that year, as well as 16½ per cent. since 1883.

The roads in the table, however, do not represent the system between Pennsylvania and the Mississippi north of the Ohio so well now as heretofore, when it included the Wabash, and it never did represent them adequately. Here are the immediate Western connections of the trunk lines, over which pass the bulk of the through shipments between the East and the whole country west of the Mississippi, as well as that east of the Mississippi, and not a little of that east of the Mississippi and south of the Ohio—of that which crosses the Ohio at Cairo, Louisville and Cincinnati. But none of the immediate through trunk line connections report, except the Cincinnati, Washington & Baltimore and the Chicago & Grand Trunk, both of which earned about one-ninth less than last year in January. The Lake Erie & Western lost one-third, and the Indiana, Bloomington & Western one-fifth, and these roads have some trunk-line traffic, though not enough to do them much good. The Alton & Terre Haute, over which the New York Central reaches St. Louis, lost nearly one-tenth. None of these roads has nearly as heavy traffic as the Michigan Central, the Lake Shore, the Fort Wayne and the Pan-handle, which do not report; but the report of the profit or loss of the whole Pennsylvania system west of Pittsburgh covers two of these roads and a larger mileage of others than reports gross earnings this year, and this Pennsylvania report shows that their surplus over liabilities was \$328,366 less this year than last. The Chicago through shipments were 23½ per cent. less than last year, average rates were lower, many industries were less active, and everything indicates that in this territory earnings were generally decidedly smaller this year than last.

The reporting roads south of the Ohio and Potomac

and east of the Mississippi are 22 in number, and their aggregate mileage and earnings and average earnings per mile were:

	1884.	1883.	Inc. or Dec.	P. c.
Miles worked.....	9,704	9,226	+ 478	6.2
Earnings.....	\$3,527,015	\$3,565,277	-\$38,262	1.1
Earnings per mile.....	360	386	- 26	6.7

These roads suffer a decrease, as was to be expected, considering the poorer Southern crops, but the decrease is much less than on the roads north of the Ohio. Ten of the 22 roads have an increase in total earnings and eight an increase in earnings per mile. The latter are chiefly east-and-west roads. The Chesapeake & Ohio shows a large gain (for this year), but there is a slight decrease on its western connection. The Cincinnati Southern nearly holds its own; the East Tennessee, with nearly 200 miles more road, earned but \$6,900 more money; and the Kentucky Central, with 70 miles more road, earned a little less money; the New Orleans & Northeastern appears for the first time, but as last year but 27 of its 195 miles of road were open, the comparison has little value. It earned \$184 per mile last January, having but just been opened through. The entire Richmond & Danville system makes a slight gain. The South Carolina shows a falling-off of one-twelfth.

The statement for the ten Eastern roads reporting (east of Ohio and north of the Potomac) omitting the earnings of the Central of New Jersey, which are given for this year only, shows the following results:

	1884.	1883.	Inc. or Dec.	P. c.
Miles worked.....	7,032	6,778	+ 254	3.6
Earnings.....	\$7,130,423	\$7,892,746	-\$762,323	9.6
Earnings per mile.....	1,014	1,164	- 150	12.9

All but two, and these two small roads, have a decrease in earnings per mile, and the decreases are large on the Grand Trunk, the Northern Central, and considerable on the Pennsylvania and the Reading; and the average decrease in earnings per mile is more than one eighth, which is greater than in any other group except that next west of the Eastern group. From the seaboard to the Mississippi, then, there appears to be a large decrease in earnings, but smaller south of the Potomac and the Ohio than north of it. And nowhere do we find an increase in earnings per mile except northwest of Chicago.

Below we give a table of earnings per mile in January for seven successive years:

	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Ala. & Gt. So.....	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Burl. C. R. & N.....	300	370	374	397	408	476	299
Cent. Iowa.....	331	358	381	381	381	381	277
Cent. Pacific.....	522	502	511	619	619	552	527
Char. C. & Aug.....	231	214	248	272	281	281	189
Ches. & O.....	374	374	480	480	480	480	544
Chic. & Alton.....	444	507	624	694	689	700	777
Chic. & E. Ill.....	433	429	409	670	594	551	500
Chic. & G. Tr.....	300	342	350	368	444	507	501
Chic. M. & St. P.....	300	312	350	368	444	507	501
Chic. & N. W.....	519	468	504	440	527	379	385
Chic. St. P. M. & O.....	274	281	274	323	323	297	238
Clev. A. & Col.....	128	181	218	239	242	212	261
Clev. & Cin.....	128	181	218	239	242	212	261
Col. & Green.....	.....	.....	.....	238	240	191	191
Denver & Rio G.....	107	.....	371	558	460	341	283
Des. M. & Ft. D.....	.....	.....	.....	297	377	145	192
East. L. & N.....	.....	.....	.....	345	469	475	398
Eastern.....	617	582	.....	704	720	870	857
E. T. Va. & Ga.....	266	411	157	270	270	286	282
Flint & Pere M.....	276	373	426	421	549	515	515
G. B. W. & St. F.....	.....	.....	.....	117	108	137	137
Ill. Cen. & St. P.....	341	260	310	298	391	303	316
Ind. Bloom & W.....	351	391	376	357	353	357	286
K. C. Ft. S. & G.....	.....	324	344	430	405	405	405
L. E. & West.....	.....	101	373	373	373	373	373
L. R. & Ft. S.....	.....	.....	.....	224	331	243	243
L. R. M. R. & T.....	.....	.....	.....	145	219	186	186
Long Island.....	.....	.....	.....	327	361	367	378
Louis. & Nash.....	411	403	400	441	476	525	502
Mem. & Charles.....	419	443	483	346	247	273	273
Mil. L. S. & W.....	.....	.....	.....	156	214	194	194
Mobile & Ohio.....	516	384	404	443	592	410	351
Nash. C. R. & St. L.....	510	431	433	382	385	356	387
Norfolk & W.....	233	257	307	385	303	408	423
Norfolk Cent.....	785	813	1,026	1,185	1,265	1,550	1,273
Northern Pac.....	.....	00	127	161	232	253	231
Pennsylvania.....	1,342	1,434	1,049	1,077	1,752	1,916	1,678
Peoria, D. & E.....	.....	113	214	267	199	297	297
Ph. & Reading.....	704	1,121	1,330	1,508	1,512	1,610	1,500
Rich. & Dan.....	213	246	341	330	375	343	358
St. L. A. & T. H. M.....	.....	306	407	536	550	677	610
Union Pac.....	664	682	792	536	553	623	797
St. L. & Cairo.....	78	117	156	230	222	230	139
St. L. & San Fran.....	293	241	287	354	389	384	386
St. P. M. & Man.....	.....	275	343	430	430	303	326
St. P. & Duluth.....	109	139	218	.....	335	340	391
S. Carolina.....	414	413	509	438	454	533	481
Tol. Cin. & St. L.....	.....	.....	162	153	145	105	105
Va. & Merid.....	.....	.....	.....	215	215	215	215
Vick. & Merid.....	.....	.....	.....	333	302	306	306
W. Jersey.....	261	281	.....	.....	340	360	360
West N. C.....	.....	.....	.....	83	100	143	143

Of 54 roads 33 have smaller earnings per mile this year than last, and 30 smaller than in 1882. But there are ten roads whose earnings per mile last January were larger than in any other year here reported.

The report of the Union Pacific Railway Company for the year 1883, unlike the monthly reports of earnings and expenses which it publishes, gives the gross earnings and working expenses of the lines owned only—that is, of the 1,820 miles of the lines from Omaha to Ogden, from Leavenworth and Kansas City to Denver, and from Denver to Cheyenne, while of the 2,710 miles of other road worked by it we get no other information in this report than what is contained in the statement of the amount of dividends and interest received on investments. But as we have heretofore had the figures for the entire system, and the report this week gives us those of the 1,820 miles of road owned, we shall be

able to ascertain what were the earnings and expenses of the whole system of leased lines, as follows:

	Gross earnings.	Expenses.	Net earnings.
Whole system.....	\$29,760,994	\$16,670,171	\$13,090,823
Lines owned.....	21,002,542	10,354,541	10,648,001
Leased lines.....	\$8,758,452	\$6,315,630	\$2,442,823

The average length of leased lines worked during 1883 was about 2,580 miles, so that their average earnings per mile were \$3,995 gross and \$947 net; while the lines owned produced \$11,373 gross and \$5,850 net per mile. In the latter large figures we see the secret of the advance of other railroads into the territory where the Union Pacific but recently was alone. Probably the assurance of one-third of the Union Pacific main line's net earnings would suffice to induce any company with good credit which is already across the Missouri to push on to Denver or Ogden. But duplicating the Union Pacific main line would not secure anything like the Union Pacific earnings; not only would that road be there to get its full share, but its great system of branches, which earn comparatively little directly, secure a great traffic to the main line not to be had in any other way.

The annual report shows a decrease of \$1,821,343 (8 per cent.) in the gross earnings of the road, and of \$1,448,833 (12 per cent.) in net earnings; and this without change in mileage. The leased lines compare as follows for the two years:

	1883.	1882.	Inc. or Dec.	P. c.
Miles worked.....	2,580	2,075	+ 505	24.3
Earnings.....	\$8,758,452	\$7,540,043	+\$1,218,409	16.2
Expenses.....	6,315,630	5,334,901	980,729	18.4
Net earn.....	2,442,822	2,205,142	237,680	10.8
Per mile:				
Gross earnings.....	3,335	3,633	- 298	8.6
Net.....	947	1,063	- 116	10.9

The expenses were 72 per cent. of the earnings of these lines in 1883, and 70½ per cent. in 1882, and more than four-fifths of the considerable increase in receipts was absorbed by the increase in working expenses, and the 505 miles of new road added but \$237,680 to the net earnings. Nor is the effect of the additions to the branches seen in the increase of the earnings of the main lines to which they contribute traffic. On the contrary, as we have seen, these suffered a decrease of 8 per cent. in gross and 12 per cent. in net earnings. It would appear then that the additions of traffic contributed by the new system were counterbalanced by a decrease of traffic elsewhere, or that there was a considerable reduction in the average rate received. The latter was the case. There was an increase of nearly one-third in the local freight traffic, but a decrease of 0.24 cent in the average rate per ton per mile on this freight. This alone made a difference of more than a million in the earnings. The decrease in the average through freight rate is given as the very large amount of 0.73 cent—which is more than the total receipt on some roads. This would make the through rate 1.30 cents per ton per mile last year, against 2.03 in 1882, and the local rate 1.95 cents against 2.19. In 1882 about 55 per cent. of the freight was through.

The gross and net earnings and expenses of the 1,820 miles owned by the Union Pacific have been for four years:

	1880.	1881.	1882.	1883.
Gross earn.....	\$22,455,134	\$24,258,817	\$22,823,884	\$21,002,542
Expenses.....	10,545,119	12,480,343	10,727,049	10,354,541
Net earn.....	\$11,910,015	\$11,778,474	\$12,096,835	\$10,648,001

Thus the gross and net earnings were smaller this year than in any other of the four, and there is a decrease in gross earnings of no less than \$3,256,275, or 13¼ per cent., since 1881.

Besides the decrease in net earnings, the Union Pacific's income from investments was \$144,417 less in 1883 than in 1882, causing a total decrease in income of \$1,593,250, notwithstanding which there was enough to pay 7 per cent. dividends and leave a surplus of \$1,261,000.

The Pennsylvania Railroad report for 1883 shows that the increase (heretofore noted) of \$2,003,418 (4 per cent.) in gross earnings on its lines east of Pittsburgh and Erie was made on each of the three divisions, and in both passenger and freight earnings. The freight traffic increased 3½ per cent., and the passenger traffic 1.8 per cent. There was very little change either in the rate, cost, or profit per ton-mile—a trifling increase in the rate, with an increase in the expenses exceeding it slightly, so that the decrease in the profit was but one-thousandth of a cent, which made a difference of but \$41,266 in its enormous business. Per passenger mile there was an increase from 2.249 to 2.297 cents in the average fare, and a decrease from 1.663 to 1.626 cents in the average expense, and therefore an increase from 0.586 to 0.671 cent in the average profit, which latter resulted in adding \$429,400 to the net earnings of the company. This was nearly half the total gain in net earnings, and was made by what might be thought a minute

increase in the average rate, and decrease in the average cost. The traffic and average rates and cost on the whole system east of Pittsburgh and Erie for eight years have been:

Year.	Ton-miles.	Pass.-miles.	Ton-miles.	Pass.-miles.	Rect.	Cost.	Rect.	Cost.
1870..	2,221,739,198	623,208,761	...	...	...	...	...	...
1877..	2,086,059,438	2,487,752,730	...	...	...	...	...	...
1878..	2,208,330,428	292,725,524	0.830	0.545	2.300	1.712	...	...
1879..	2,974,925,881	314,290,080	0.824	0.480	2.255	1.709	...	...
1880..	3,239,492,798	382,787,186	0.918	0.540	2.222	1.674	...	...
1881..	3,631,829,498	446,316,555	0.857	0.517	2.276	1.615	...	...
1882..	3,977,280,048	496,202,927	0.874	0.554	2.249	1.663	...	...
1883..	4,126,602,887	505,180,481	0.881	0.562	2.297	1.626	...	...

Thus though the increase of traffic which began after 1877 continued last year, it was much less than for several years. The yearly percentages of increase have been:

Year.	Freight.	Passenger.
1878 to 1879	2 1/2 per cent.	7 per cent.
1879 to 1880	0 "	25 "
1880 to 1881	12 "	17 "
1881 to 1882	9 1/2 "	11 "
1882 to 1883	3 3/4 "	1 3/4 "

At the rate of last year's increase, the gain in freight since 1878 would take 11 1/2 years, and the gain in passengers 24 years.

The recent course of the average rate and cost per ton per mile deserves special attention. It seems that the downward course of rates, which had lasted for many years, has been arrested. There was an increase of 2 per cent. in the average freight rate from 1881 to 1882, and an increase of 0.8 per cent. from 1882 to 1883. But there has also been an increase in the cost, and it was higher last year than in any other of the six. This being so it is fortunate that it was possible to increase the average rate. With the freight rate of 1882 the net earnings would have been about \$290,000 less; with the rate of 1881 they would have been \$966,000 less. The average passenger rate was the highest since 1878—partly, doubtless, because of a large reduction in the immigrant travel.

This arrest of the downward course of rates and increase in the cost per unit of traffic is seen also in the reports of other important companies, and is a notable fact.

There have been no monthly reports to foreshadow the results on the Pennsylvania lines west of Pittsburgh and Erie, now given in the report. These have been:

	1883.	1882.	Inc. or Dec.	P. c.
Gross earn.	\$36,127,325	\$35,331,003	+	2.3
Expenses.....	24,072,558	23,368,324	+	6.0
Net earn.	\$11,154,767	\$11,962,679	-	\$807,912

Thus there was on these lines some increase in earnings, but it was only half as great as the increase in expenses, so that there is considerable decrease in the net earnings. This western system is reported in three groups. The lines worked by the Pennsylvania Company (including the Fort Wayne, the Erie & Pittsburgh and the Cleveland & Pittsburgh made a very small gain in earnings (\$121,686) and a very large one in expenses (\$990,177); those worked by the Pittsburgh, Cincinnati & St. Louis had an increase of about 6 per cent. in earnings, and of nearly 10 per cent. in expenses, resulting in a small decrease in net earnings. The other group includes the controlled lines which are worked by the companies owning them, among which are the Chicago, St. Louis & Pittsburgh (this year for the first time), the Grand Rapids & Indiana, and the Vandalia Line. These roads show an increase of about \$290,000 (3 per cent.) in gross earnings and \$167,000 (2.2 per cent.) in expenses. There was a decrease of about 1/2 per cent. in the passenger traffic of this whole western system, and a decrease of 1 1/2 per cent. in its freight traffic. As the gross earnings were 2 1/2 per cent. larger, there must have been some increase in the average rate received, as on the eastern system.

The through shipments eastward by rail from Chicago during the month of January for six successive years have been, in tons:

Year.	1879.	1880.	1881.	1882.	1883.	1884.
	192,512	163,378	263,872	321,148	272,162	208,060

Thus the shipments of the month this year were 2 1/2 per cent. less than last year, 35 per cent. less than in 1881, but 27 per cent. more than in 1880, and 5 per cent. more than in 1879. Besides the shipments by the pool roads in 1883 there was the quantity carried by the Nickel Plate, given above as 12,800 tons. Thus the shipments this year were by eight roads, last year by seven, for two years previous by six, and in 1879 and 1880 by five. Subtracting the tonnage carried by the new roads the other six carried as follows:

Year.	1881.	1882.	1883.	1884.
	203,872	321,148	259,348	161,246

Thus for the six older roads the shipments this year were nearly 40 per cent. less than in 1883 and 1881, and 50 per cent. less than in 1882.

But the rates were demoralized most of the month this year; during 13 days of it a 20 cent rate was the regular one, and probably half of the shipments of the month were contracted for while that rate prevailed, and all the rest of the month there were re-

ductions on a large part the shipments. If we assume that half the shipments were at 20 cents and that on the other half the average reduction was but 10 per cent., we have as the earnings from this business (to all the roads):

Year.	1879.	1880.	1881.	1882.	1883.	1884.
	\$975,510	\$1,309,800	\$1,847,110	\$802,870	\$1,632,972	\$977,882

This shows the earnings from this business to have been about the same as in 1879, 25 per cent. less than in 1880, 47 per cent. less than in 1881, 22 per cent. more than in 1882 (when the shipments were largest), and 40 per cent. less than last year.

But what was carried by the six older roads earned but \$757,856 this year in January, against \$1,556,088 last year, and the amounts given above in previous years.

We see thus that there were three things to reduce the profits on the Chicago business last January. In the first place, the whole amount of the shipments was the smallest for four years; in the next place, it was divided among a large number of carriers, and in the third place the rates were reduced materially. The gross receipts of the six older roads from this traffic, it seems, were not half as great this year as last; and of course the reduction in net earnings must have been much larger in proportion. Assuming the expenses at \$3 per ton, the profit to all the roads on this business was:

Year.	1879.	1880.	1881.	1882.	1883.	1884.
Gross receipts	\$397,971	\$819,000	\$1,057,494	\$160,574	\$816,486	\$353,702
Expenses	...	...	...	...	...	...
Profit	...	...	...	...	...	...

There have thus been great fluctuations in these profits, and last January they were less than in any other year except 1882, and 56 per cent. less than last year.

But if we take the six older roads we shall find that the profits on the shipments carried by them were but \$274,118 this year, against \$778,044 last year, and the sums named in previous years—that is, the old Chicago roads earned 65 per cent. less profit from their business this year than last, and only about one-fourth as much as in 1881.

The amounts of gross and net earnings are from the shipments through to the seaboard; but the sums earned by the several Chicago roads in the different years were in proportion to those given.

We see here again, as so often before, the great effect on profits caused by a cut in rates. Last January the irregularities in rates caused, by this estimate, a reduction of \$270,478 in the profits on the Chicago shipments, and made them over 40 per cent. less than they would have been had rates been maintained.

The Lake Shore & Michigan Southern statement of income account for the last three months of 1883, made to the New York Railroad Commission, which compares as follows with that shown by the annual report for 1882:

	1883.	1882.	Inc. or Dec.	P. c.
Gross earn.	\$4,754,247	\$5,425,478	-\$671,231	12.4
Expenses.....	2,670,801	2,914,271	- 243,470	8.4
Net earnings.....	\$2,083,446	\$2,511,207	-\$427,761	17.0
Interest.....	796,368	678,739	+ 117,629	17.3
Rentals.....	117,909	117,541	+ 368	0.4
Prior charges.....	\$914,337	\$790,280	+ \$118,057	14.8
Balance	\$1,169,100	\$1,714,927	- 545,818	31.8
Per share.....	\$2.34	\$3.44	- \$1.10	31.8

We have thus in this quarter a decrease of about one-eighth in the gross earnings and of more than one-sixth in the net earnings of the road. Meanwhile the interest charges (chiefly on account of the bonds issued for the purchase of Nickel Plate stock) increased one-sixth, and there is thus a decrease of no less than \$545,818, or 31 1/2 per cent., in the surplus available for dividend, which was \$2.34 per share in 1883, against \$3.44 in 1882.

This is a great decrease, truly, but it still leaves a surplus in excess of 2 per cent. dividend paid. In fact, the earnings and profits in the last quarter of 1882 were exceptionally great: during the first half of that year the profits had been but \$2.17 per share, so that the monthly profit was four times as great in the last quarter as in the first half of that year—\$1.45 against 36 cents per share.

Nevertheless the net earnings in the last quarter of last year were exceptionally unfavorable. The gross earnings, working expenses (including taxes) and net earnings in the last quarter of the year for five successive years have been:

	Gross earnings.	Expenses.	Net earnings.
1879.....	\$4,589,380	\$2,359,166	\$2,230,214
1880.....	4,876,865	2,708,997	2,167,868
1881.....	4,570,818	3,062,182	1,508,636
1882.....	5,425,478	2,914,271	2,511,207
1883.....	4,754,247	2,670,801	2,083,446

Thus the net earnings, though \$428,000 less than in 1882, were \$575,000 greater than in 1881, when bad harvests and the railroad war combined to destroy profits, and they amounted to but about \$1.68 per share. But the net earnings last year were \$84,000

less than in 1880 and \$147,000 less than in 1879, and as the fixed charges have increased more than \$100,000 this makes the stockholders' profits exceptionally small in 1883. It is something more than the 2 per cent. dividend, it is true, but this is usually the best quarter of the year. Thus the profit per share in this quarter for successive years has been:

Year.	1879.	1880.	1881.	1882.	1883.
	\$3.09	\$2.97	\$1.63	\$3.44	\$2.34

Thus, in none of these years except that of the railroad war was the profit per share in this quarter so small as last year. Of the decrease from 1882 24 cents per share was due to the increase in fixed charges, the remainder to the smaller net earnings.

The statements of the Chicago shipments made from week to week have shown that in the quarter referred to, and indeed throughout the last half of 1883, the Lake Shore carried an unusually small proportion—much less than what was awarded to it. Doubtless the traffic of the Nickel Plate, local as well as through, has been got chiefly at its expense. There were, therefore, special causes of loss by this road, while the general causes have been sufficient to reduce earnings and profits on most railroads in the territory which it serves.

For the last three months of 1883 the New York, Chicago & St. Louis Railway Company reports its income account to the New York Railroad Commission as follows:

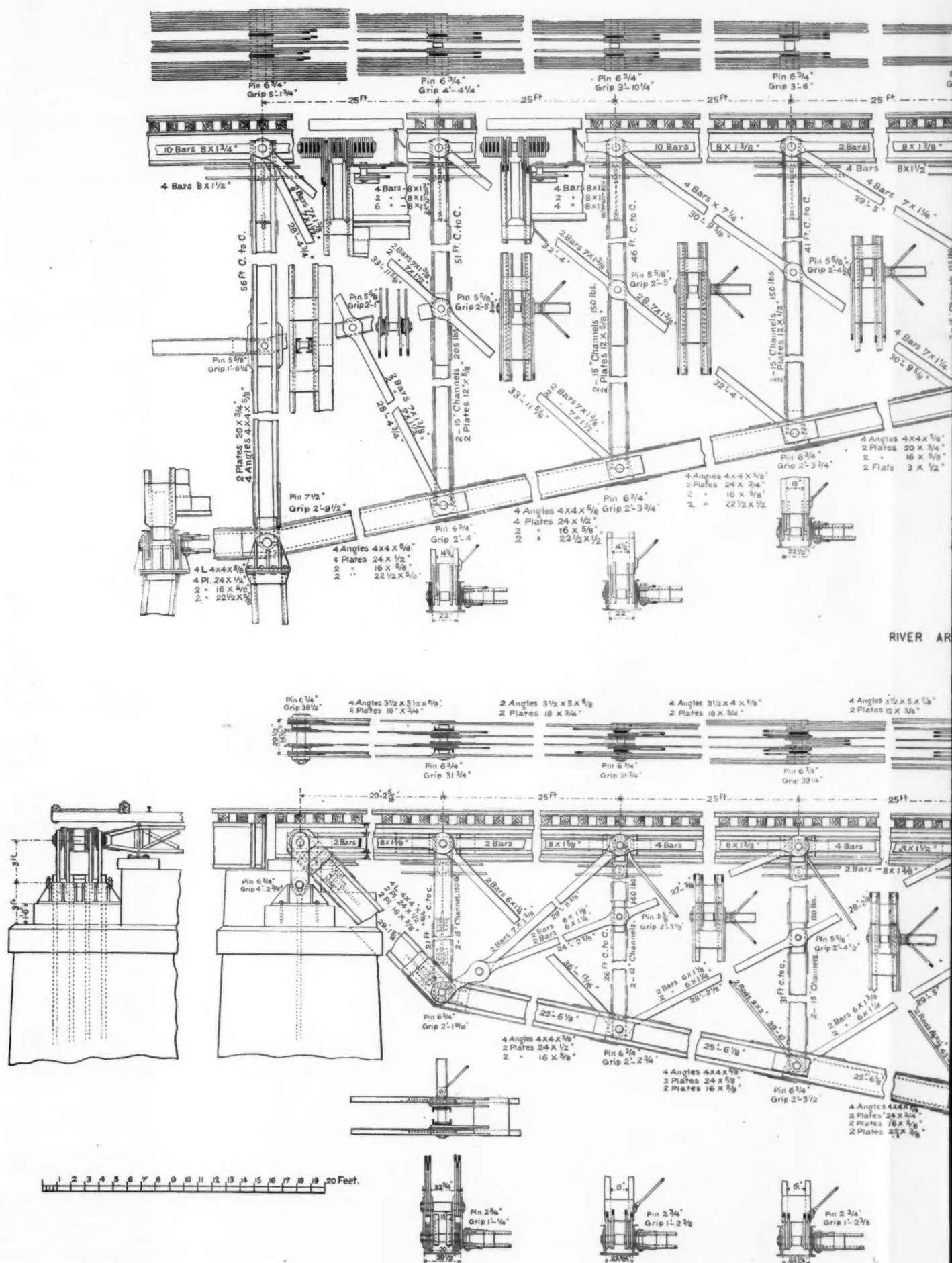
Gross earnings.....	\$854,433.91
Working expenses (56.14 per cent.).....	479,719.62
Income from other sources	374,714.89
Interest	27,597.00
Taxes.....	\$40,311.89
Rentals.....	\$341,193.95
	33,758.70
	1,253.72
Net income.....	370,266.37

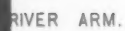
The company works 524 miles and owns 518 miles of railroad, so that the gross earnings were \$1,631 and the net earnings \$715 for the quarter per mile of road worked. This is usually the best quarter of the year for a road so situated. Excluding taxes, which are properly chargeable to working expenses, the net earnings were \$340,956, or \$651 per mile, which is by no means a small amount for a railroad so new, and larger than many dividend-paying railroads have. Its income applicable to interest and dividends was \$397,300 for the quarter. The interest payments reported exceed those which would accrue in one quarter by the last statement of the funded debt by \$37,194; but this statement shows only \$600,000 issued of the \$10,000,000 of second-mortgage bonds authorized, and further issues will probably be made as required. The company must pay \$400,000 yearly of the principal of its equipment bonds, but this may properly be provided for by the issue of more second-mortgage bonds; and the report indicates that the company in this quarter made \$26,105 more than its fixed charges—a very narrow margin made in what is usually the best quarter of the year, but a much better showing than was to be expected under the circumstances. So far during the current quarter the road has carried an unusually large proportion of the Chicago shipments, but it will not be safe to conclude that it has made much profit on this business, which doubtless has largely been taken at reduced rates—that is, with one-third to two-thirds of the ordinary profit cut off.

The February earnings of the two great railroads northwest of Chicago were greater this year than last, when they were bad, and the gain of the Chicago & Northwestern was no less than 15 1/2 per cent.; that of Milwaukee & St. Paul, 2 1/2 per cent.; but compared with 1882 the Northwestern's increase was only 3 per cent., and the St. Paul shows a decrease of 4 per cent. These and most other Western railroads, especially those which suffered much from snow in January and February (which postponed the movement of freight), had exceptionally large earnings in March last year, so that the first quarter of the year made a good showing in spite of poor earnings in January and February. Thus the earnings of some of the roads in each of the first four months of 1883 were:

	January.	February.	March.	April.
Chic. & N. W.	\$1,359,180	\$1,257,144	\$2,044,000	\$1,972,000
C. & N. W.	1,257,623	1,311,305	2,095,292	1,754,379
C. St. P. M. & O.	312,017	282,256	438,520	434,071
Chic. & Burl. & Q.	1,025,680	1,611,021	2,396,584	1,824,130
Ill. Cen. (in Ill. & Ia.)	675,545	569,448	760,737	595,682
Missouri Pacific.....	732,541	620,988	857,832	603,273
Wabash.....	1,307,783	1,070,758	1,479,236	1,163,654

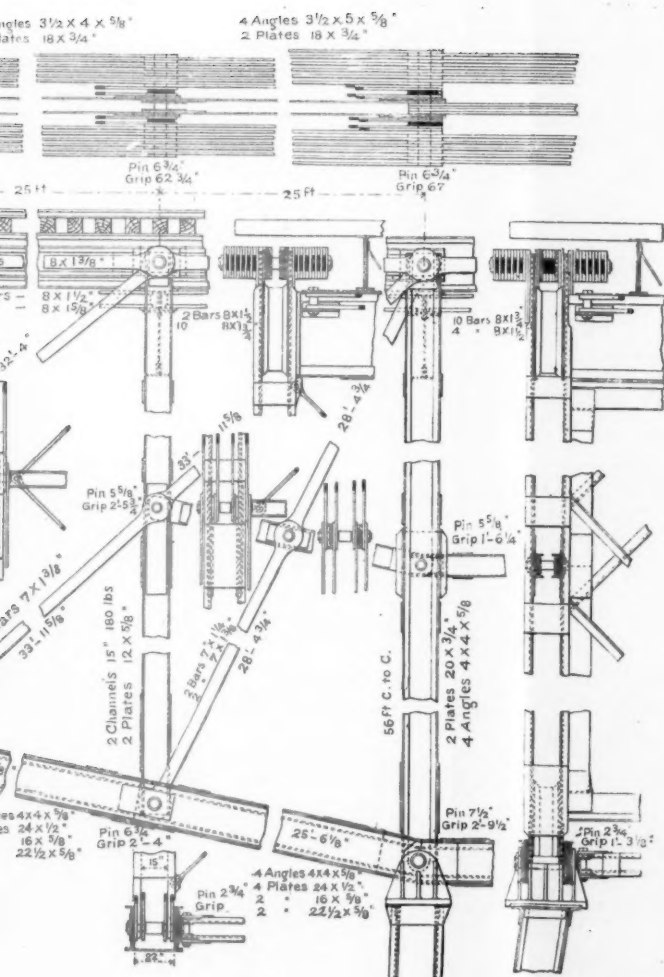
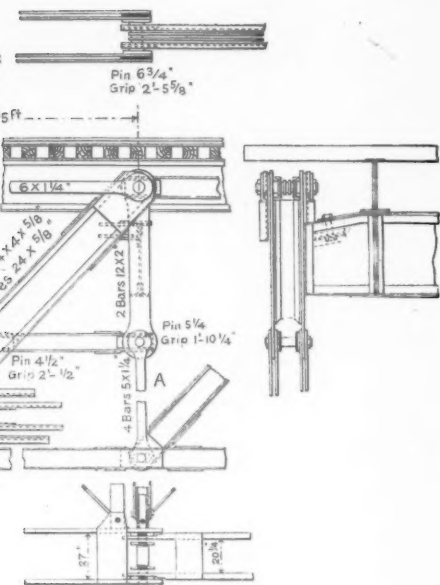
Thus the St. Paul earned 60 per cent., the Northwestern 50 per cent., the St. Paul & Omaha 55 per cent., the Burlington 46 per cent., the Illinois Central 30 per cent., the Missouri Pacific 38 per cent., the Wabash 38 per cent. more in March than in February, and there was a decrease from March to April on all of these roads, which was large on all except the Milwaukee & St. Paul and the St. Paul & Omaha, which,





S CANTILEVER BRIDGE.

ected by the CENTRAL BRIDGE WORKS, Buffalo, N. Y.



with roads further north, usually do in April what other roads do in March.

This fact, that March earnings were extraordinarily large last year needs to be borne in mind as the weekly and monthly reports for March come in from the Western roads this year. They may be considerably less than last year without being very bad, and if they are as large as last year they will in most cases be very good. Southwestern as well as Western roads did unusually well in March last year, and roads north of the Ohio and in the East very well; but Southern roads not better than usual.

February earnings are reported for several roads besides the Northwestern lines mentioned above. The Chicago & Alton shows a gain of 1½ per cent. over last year and of 10½ per cent. over 1882, and the largest earnings it ever had in February. The St. Louis and San Francisco gained no less than 40 per cent., with but a small increase in mileage. The Richmond & Danville shows a trifling loss; the Milwaukee, Lake Shore & Western a gain of 17 per cent., which probably is due largely to greater activity in getting out logs in the lumber country on its road, which may be expected to give a larger traffic to and from the saw-mills in the summer.

The Northern Pacific gained no less than 49½ per cent. in total earnings, and still had very small ones, as usual in February, but there was some increase in earnings per mile. The Canadian Pacific has an increase of only 17 per cent., though its increase in mileage was 76 per cent., its earnings per mile falling from \$167 to \$111. The Manitoba shows a gain over last year, which it had not done before since last April. The Louisville & Nashville reports a decrease of only 1½ per cent.

The share of the New York through shipments westward awarded to the Delaware, Lackawanna & Western is not 14 per cent. of the whole, but 14 per cent. of what is left after taking out the West Shore's share, which has been fixed temporarily at 10 per cent. of the whole. Thus the Lackawanna's share becomes 12.6 per cent. of the whole, and the two new roads take 22.6 per cent. of the New York shipments, which will make a material difference with the old roads. These two new roads also get 13 per cent. each of the Castle Garden immigrant traffic, and so further make themselves disagreeable to the old lines, and not the less so as they come in for a share at a time when immigration is decreasing.

The shipments westward from New York continue remarkably large considering the general condition of business. They were as large in February as in any other year, except 1882—perhaps larger. The smaller seaboard receipts of flour and provisions seems not to have prevented large sales and shipments of goods to the country from which this produce chiefly comes.

Chicago through rail shipments eastward for the week ending Feb. 23, for five successive years have been:

	1880.	1881.	1882.	1883.	1884.
Tons.....	46,780	48,921	57,662	61,533	45,014

The shipments of the week this year were thus 27 per cent. less than last year and less than in any other year since 1879, at least. At this time last year the shipments began to be exceptionally large, and so continued until April, the receipts being larger in March than in any other month of the year, and larger than in any other month of any year except March, 1880 and January, 1882. There are large enough stocks on hand in the Chicago elevators to make very large shipments in March this year also, but there is not the least probability that they will be forwarded freely before navigation opens, unless rail rates are made very low.

The percentage of the total shipments by each road in this week ending Feb. 23, this year and last, was:

	1884.	1883.		1884.	1883.
Ch. & G. T.....	17.7	8.5	Ft. Wayne.....	15.6	22.0
Mich. Cen.....	15.6	23.6	Ch. St. L. & Pitts..	3.7	11.6
Lake Shore.....	13.3	25.4	Balt. & Ohio.....	7.8	8.0
Nickel Plate.....	17.3		Ch. & Atlant.....	9.0	

These percentages are not very different from those shown for the week by the incomplete Board of Trade report which we published last week, except in the case of the Michigan Central, which that report showed to have carried 21.5 per cent. of the whole, whereas its actual percentage of the through shipments was but 15.6 per cent.; while the Fort Wayne's actual percentage was 15.6 instead of the 10.8 then reported. The three Vanderbilt roads together in the week ending Feb. 23 actually carried 46.2 per cent. of the total shipments, and the two Pennsylvania roads 19.3

For seven successive weeks the Chicago shipments have been:

	Week ending—	Jan. 13.	Jan. 19.	Jan. 26.	Feb. 2.	Feb. 9.	Feb. 16.	Feb. 23.
Tons.....		45,304	65,550	41,005	40,727	41,834	38,732	45,014

Thus the shipments for the week ending Feb. 23 were the largest for five weeks, while those of the previous week were the smallest for four weeks. The increase over the previous week was no less than 16 per cent., but still, as we have seen, the shipments were small for the season.

For the week ending March 1 the incomplete report to the

Chicago Board of Trade of through and local shipments of flour, grain and provisions, shows a total of 44,175 tons against 59,937 tons in the corresponding week of last year. Of the total last week 9,322 tons were flour, 29,291 grain and 5,562 tons were provisions. Compared with last year there is a decrease of 48 per cent. in provisions, 40 per cent. in flour and 15½ in grain. The percentages carried by each road were: Chicago & Grand Trunk, 10.5; Michigan Central, 18.5; Lake Shore, 17.8; Nickel Plate, 10.7; Fort Wayne, 10.7; Chicago, St. Louis & Pittsburgh, 5.7; Baltimore & Ohio, 10; Chicago & Atlantic, 18.1. This is a notable change from the course of the shipments for several preceding weeks, as shown in more detail elsewhere, the Chicago & Grand Trunk and the Nickel Plate no longer having an exceptionally large share, and the Chicago & Atlantic gaining greatly.

The New York & New England's quarterly report for the last three months of 1883 shows \$140,305 of net earnings to pay \$427,505 of interest, rents, taxes and insurance. The gross earnings were a little more than \$93,166 (11 per cent.) more than in 1882, when the road was very badly blockaded, but 85 per cent. of the earnings were absorbed by the working expenses.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads in 1884 as follows:

Cape Girardeau Southwestern.—Extended from Sturdivant, Mo., southwest to Puxico, 12 miles.

Central Pacific.—Track on the *Oregon Division* is reported laid to a point thirty-two miles northward from Redding, Cal., an extension of 12 miles.

Cincinnati, Wheeling & New York.—Extended from Seneca, O., to Morgan, 5 miles.

This is a total of 29 miles of new railroad, making 213 miles reported to date for 1884. The total track reported laid to the corresponding date for 12 years is as follows:

	Miles.		Miles.
1874.....	213	1878.....	204
1875.....	261	1879.....	82
1876.....	609	1880.....	232
1877.....	254	1881.....	80
1878.....	575	1882.....	161
1879.....	141	1883.....	328

The statements include *main track only*, no account being taken of second tracks or other additional tracks or sidings.

Railroad Policy in England.

IV. RAILROAD COMMISSIONS.

As early as 1840 it became quite evident that the courts would not and could not enter upon many questions of railroad management where public interest and even public safety were involved. Accidents and the means of preventing them formed the chief topic of this kind. It required technical knowledge; the courts could not interfere until after the harm was done. It was thought that the Board of Trade might be of service here.

What was the Board of Trade? It is not easy to say concisely, because we have nothing corresponding to it in the United States. Suppose the Bureau of Statistics were placed under the direction of the Chairmen of the Senate and House committees on commerce, and we shall have some idea of its composition. But its purpose was not simply to collect information; it was designed to take active measures for public safety. Up to 1849 its attention was mainly confined to shipping. It was hoped that if its powers were extended to include railways it might obtain valuable information concerning them, might prevent the construction and use of unsound railways and lessen the danger of sound ones. At any rate it was easier to give powers of this kind to an authority already existing than to create an entirely new one.

By an act of 1840 the Board of Trade was empowered (1), to appoint inspectors to examine and report upon lines of railway, before they were opened and even afterward; (2), to take cognizance of the by-laws of all railways, with special reference to any proposed changes; (3), to require traffic returns; (4), to regulate arrangements for private sidings.

These seem like considerable powers. Practically they amounted to very little, because there was no means of enforcing them. If a road was unsafely built the Board of Trade could not prevent its running; it could only give the public information of the fact. If the by-laws contained anything objectionable the Board of Trade could only notify the proper authorities; it could of itself do nothing. As a matter of fact it would only bring the board into hot water to give any such notice; nothing would ever be done. As for the matter of traffic returns, it was only in a few particulars that the Board of Trade could compel the roads to give information. The original bill provided for more, but it had been amended in the House of Commons. And public opinion was not then prepared to support such a body as the Board of Trade in efforts to secure publicity of accounts. People thought that this was a violation of business secrets.

This was the first form of railway commission. Its powers were seen to be too slight to effect anything. Some additions were made to them in 1842, when the Board was empowered not merely to report upon faulty arrangements, but, where they involved danger to life, to delay for a month the opening of any such railways; and further to arbitrate between railways when they could not agree upon arrangements for public safety at the point of junction.

At the end of the session of 1844 there was an attempt to create an independent railway department. A committee

of the Board of Trade was appointed to make preliminary reports to Parliament on all the applications for railway charters. This committee is usually referred to as Lord Dalhousie's Railway Board. Something of the kind seemed necessary to relieve Parliament from the stress of business with which it was overwhelmed. It had all the work of Congress to do, plus all the work of state legislatures; under this latter head were some 247 applications for railway charters. The Board was kept hard at work, and seems to have exercised care and diligence; but its decisions gave little satisfaction. Its members were comparatively unknown. Its proceedings were to a certain extent private, and this aroused suspicion. This Railway Board also (in harmony with the recommendations of a recent parliamentary committee) discountenanced parallel roads which speculators were anxious to build; and the hatred of the speculators was poured out upon them more richly than the thanks of the railroads already existing. Finally, the House of Commons was jealous of the Board. The House of Commons always is jealous of everything else on general principles; and in this case a great many members of the House were interested in schemes on which the Railway Board reported adversely.

The luckless Railway Board thus had enemies on every side. Its decisions were by no means final. They were in several instances reversed by the House of Commons. To fill up the measure of its discredit, a member of the Board was thought to have used his place for speculative ends; and the indignation of Parliament was not any the less, because some of its members were open to the same charge. After an inglorious existence of about a year, the Board was abolished. It was mainly composed of well-meaning men; but neither the place nor the salary were such as to attract first-rate men whose decisions would command public confidence.

They tried again in 1846. This time they offered first-rate salaries and secured well-known men. To this Commission they transferred the "powers previously possessed by the Board of Trade"—that is to say, power to make reports which nobody would act on. Then in 1847 a bill was brought in to give the new commission a little real authority. It was rejected by the House of Commons. So the commissioners enjoyed their honors and emoluments and had nothing to do; until in the year 1851 their office was abolished, and its "powers" transferred back to the Board of Trade. Their fate had been the reverse of that of the Board of 1844-45. The Board of 1844-45 died of too much work and too little pay. The Commission of 1846-51 died of too much pay and too little work. Thus ended the first set of experiments in railway commissions.

From 1851 to 1873 the only administrative body dealing with railroad matters was the Board of Trade. It did some good work. It investigated accidents, collected statistics, and for a time made reports on new railways. It had some other vague powers, but it could not use them; it would not have been supported by public opinion. The one serious effort to enlarge its sphere of action, in 1854, was defeated. People hoped that the courts could deal with all the questions that might arise.

But the courts could not deal with them after all. And so the authority which was denied the Board of Trade in 1854 was granted on a larger scale to the new Railway Commission in 1873. It was not that Parliament had changed its mind on a question of principle. It was simply this: they had passed certain laws from 1840 to 1854, and subsequently; they had hoped to enforce these laws by the machinery already existing. They found they could not do it, and were now trying to create a piece of machinery which should work better. That this was their idea is shown by the title of the act under which the Railway Commission was created: "An Act to make better provision for carrying into effect the Railway and Canal Traffic Act, 1854, and for other purposes connected therewith." Its main provisions were as follows:

The Commission was to consist of three members; one of them a railroad man, one of them a lawyer. They received a salary of £3,000 each. They were to decide all questions arising under the Act of 1854 and subsequent acts connected with it. They were further empowered to arbitrate between railroads in a variety of cases; to compel companies to make through rates which should conform to the intention of the act of 1854; to secure publicity of rates; to decide what constitutes a proper terminal charge; and some other less important matters. On questions of fact their decision was to be final. On questions of law it was subject to appeal. The Railway Commissioners themselves were to determine what were questions of fact and what were questions of law. Subsequent acts have made but slight changes in these powers.

The Commission was originally appointed for five years—July, 1873, to July, 1878. Since that time it has been continued by successive acts of Parliament for shorter periods, and is now living on, on sufferance, from year to year. There have been efforts to make it permanent, but thus far without success.

The Commission consisted of excellent men—Sir Frederick Peel, Mr. Price, formerly of the Midland Railway, and Mr. Macnamara; the last named died in 1877, and was succeeded by Mr. A. E. Miller. They went to work with energy and spirit, but without rashness. If any men could have made the experiment a success, they would have done it. But they did not. They have not exactly made a failure, but the results are very disappointing. Some good they have undoubtedly done; but very little indeed compared with what was expected of them. Nobody is satisfied. The railroad men complain of them for what they have done; the merchants complain of them for what they have not done.

It is not easy to see what can be done in the face of these difficulties. The lawyers say, strengthen the legal element

in the Commission. Some of the railroad men say so too, because they think that a Commission formed on the model of the old courts would interfere no more than the old courts. On the other hand many men desire the appointment of a public prosecutor to relieve individuals of the danger and odium of bringing complaints; or that chambers of commerce may be allowed to undertake such prosecutions. Others go still further, and urge that the powers of the Commission be increased, and that they be allowed to determine, on general grounds, what constitutes a reasonable rate. The Commission itself would be glad to do that. But such a thing, however cautiously carried out, would involve the Granger principle of fixing rates. It seems quite unlikely that Parliament will make any of these proposed changes, except perhaps to give chambers of commerce the right to prefer charges.

We have dwelt on the dark side of the picture, because there is a general impression in this country that the English Railway Commission is a complete success. It must not be inferred that it is a complete failure. It has in the first nine years of its existence passed judgment on 110 cases. Only 17 of these have been appealed, and in 11 of them the Commissioners have been sustained. The decisions have as a rule been marked by strong sense and impartiality. The direct good to the complainants may have been very small, but the indirect good to the public was doubtless great. The Commission has made serious and generally successful efforts to enforce a law in cases where it would otherwise have been a dead letter. These particular cases may have given more trouble than they were worth. But the very existence of such a power constitutes a check upon arbitrary action in general. We cannot assume, as many do, that the few complaints preferred before the Commission represent anything like the amount of well-founded grievances. But we can assume that the chance for such complaints to be made and heeded makes the railroad managers more cautious in giving occasion for them.

ARTHUR T. HADLEY.

Foreign Railroad Notes.

In the Austro-Hungarian Parliament, last December, a delegate introduced a bill for regulating railroad rates in the two kingdoms, which provides that all rates for carrying freight shall be subject to the approval of the Minister of Commerce; that rebates of all kinds, like all other railroad tariffs, shall be made public, and also the conditions on which the rebates are granted, and be subject to the approval of the Minister of Commerce, and the conditions of granting rebates must not be such as would make them possible only to favored individuals. Agreements and contracts of all kinds of railroad companies with each other or with foreign railroad and steamship companies must also be approved by the Minister of Trade. Rates may not be higher for a shorter distance than for a greater distance from the same station, but the Minister of Commerce may permit such a difference in the foreign trade when no domestic interests would suffer thereby.

The necessity of this latter provision has become patent to the Austrian grangers even, as they export a large amount of produce, and if their railroads charged as much for carrying it as the average rate which would enable them to live, Russia and Roumania and other countries would supply the produce which now goes from Austria-Hungary.

The Railroad Information Society of Berlin offers a prize for an essay on the following subjects: "The construction and working of railroad rolling stock with fixed axles compared with that with movable axles and swiveling trucks." The essay must give the history of the development of the construction of cars with rigid axles, those with movable axles and those with trucks, especially in Germany, not omitting the methods of construction used in other countries; and must discuss the advantages and disadvantages of the three systems. The effect of each is to be examined on safety in running at different speeds on curves and tangents, and also the adaptability to passenger and freight traffic. Dead weight, cost of construction and maintenance, effect on the location, construction and maintenance of the road, are all to be considered. The manuscript must be sent in by the end of this year. The prize is \$75, but the author will remain owner of his manuscript.

A German railroad man, with American experience, would seem to be the right man to discuss the matter for the Germans; but we doubt if there is any. The German railroad men in this country have usually had no railroad experience in Germany. The persons most familiar with the two kinds of rolling stock are English railroad men now serving in this country or Canada; but the essay must be in German.

TECHNICAL.

Locomotive Building.

The Rogers Locomotive Works in Paterson, N. J., are building six engines for a narrow-gauge road from Villaneuva to Barcelona, in Spain. Three of them are eight-wheel passenger engines and three are mogul freight engines.

The Brooks Locomotive Works in Dunkirk, N. Y., recently completed their one-thousandth engine and the occasion was celebrated with appropriate ceremonies by the employees of the works.

Car Notes.

The Chicago, Burlington & Quincy Co. some time ago put the Janney automatic coupler on 50 stock cars as a test. It is said that the coupler has worked so well that it is now to be put on a large number of the company's freight cars.

The Chicago & Atlantic Co., in its folders and other advertisements, calls special attention to its passenger cars as being equipped with the "noiseless paper wheel, 42 in. in diameter."

The Pullman car shops, at Pullman, Ill., are to build 10 first-class passenger cars for the Delaware, Lackawanna & Western road.

The Baltimore & Ohio shops at Mount Clare in Baltimore have begun the construction of a number of sleeping and parlor cars for use on the road. These cars will have all the latest improvements and it is expected that they will be superior to any now on the road.

The Atglen Car Works at Atglen, in Chester County, Pa., which have been idle for seven or eight months, will soon resume work.

The Harlan & Hollingsworth Co., in Wilmington, Del., is building a number of passenger cars of American pattern for the Spanish government. They are to run on the railroad from Barcelona to Madrid.

The St. Charles Car Co., in St. Charles, Mo., has just delivered 250 coal cars to the Missouri Pacific road, and is now building 350 box cars for the same road and a number of refrigerator cars for the Klausman Brewery Co. of St. Louis.

Bridge Notes.

The firm of Kellogg & Maurice will retire from active business on completion of their present contracts. The bridge shops at Athens, Pa., have been leased to the Union Bridge Co., and will be under the management of that company as soon as the iron work for Kellogg & Maurice's contracts is manufactured. Further information in regard to the organization of the new firm, the Union Bridge Co., is given elsewhere.

C. J. Schultz, of the Iron City Bridge Works in Pittsburgh, has taken the contract for the new bridge over the Monongahela River in Pittsburgh for the Pittsburgh Junction road.

Iron Notes.

Two new blast furnaces are in process of construction in the Lake Superior iron region, one at Hermansville, and one at Iron River, on the Menominee River Branch of the Chicago & Northwestern road.

The statement of the Colorado Coal & Iron Co. for the year ending Dec. 31 last shows that at its works at South Pueblo, Col., and Denver, the company manufactured pig-iron, 25,000 tons; steel rails, 16,000 tons; nails, 63,000 kegs; merchant iron, etc., 4,500 tons.

The firm of Park Brothers & Co., of the Black Diamond Steel Works in Pittsburgh, established in 1862, has been reorganized as a corporation under the name of Park, Brothers & Co., Limited, with a capital of \$2,000,000. The principal stockholders are D. E. Park, William C. Park, Richard G. Park, Richard C. Gray and the Estate of James J. Park. William G. Park is Chairman and De Witt C. Clapp Secretary and Treasurer of the new company.

The Pittsburgh Furnace Co. has changed its name to the Carrie Furnace Co. The furnace will go into blast next week.

Hussey, Howe & Co., in Pittsburgh, the well-known steel manufacturers, are erecting an immense new building over the old buildings which cover their puddling furnaces, a 9-in. wheel bar mill and shears. The new structure was a part of the main building at the Centennial Exposition, and when completed the old buildings will be torn down.

The workmen of the Scranton Steel Co. have accepted a reduction of 25 per cent. in their wages for the winter.

No. 3 furnace of the Glendon Iron Co. in Easton, Pa., has gone out of blast for repairs.

The new blast furnace No. 3 of the Pennsylvania Steel Co. at Steelton, Pa., which was put into blast recently, is 70 ft. high and 18 ft. bosh. It has all the latest improvements in blast furnace construction.

Manufacturing Notes.

Messrs. E. J. Brooks & Co. have removed from No. 16 Cortlandt street to 51 Dey street in New York, the change being made to accommodate their increasing business, which had outgrown its former quarters.

The Lane & Bodley Co., in Cincinnati, recently erected a new shop building which is equipped with first-class tools for the manufacture of an automatic cut-off engine of their own design.

The shops of the Potomac Manufacturing Co. in Alexandria, Va., have been purchased by a new company, known as the Virginia Iron Ship-Building Co. The new concern is making preparations to do an extensive business in building iron vessels.

The Detroit Car Spring Co. has recently completed an additional building 150 by 60 ft., which will contain three large steam hammers and the necessary furnaces for heating the steel, and also a Siemens crucible furnace of 40 pots capable for converting wrought-iron into steel.

The Detroit Dry Dock Co. in Detroit has taken a contract to build two large steel propellers for the Western Transit Co. They are to have a capacity of 2,500 tons each.

The Rail Market.

Steel Rails.—Sales of some 15,000 tons have been reported recently and there is quite an active demand for small lots. There are not many large contracts likely to be placed at present, but the mills have plenty of work and the quotations continue steady at \$34 to \$35 per ton at mill for heavy sections, small lots being taken at the higher rate. There is also quite an active demand for light rails, the prices for which continue unchanged.

Rail Fastenings.—Trade continues very quiet although there are some symptoms of improvement. Prices continue unchanged at \$2.50 per 100 lbs. in Pittsburgh for spikes and \$2.75 to \$3 for track-bolts. Splice-bars are still quoted at the same rates as heretofore, 1.80 to 1.85 cents per lb.

Old Rails.—The market is quiet but prices are firm, as good rails are rather scarce. Quotations for iron have been \$23 to \$24 per ton for tees at tidewater. Crop-ends (steel) are dull and are quoted at \$22 to \$23 per ton.

Union Bridge Co.

The Union Bridge Co. is a new organization which has been formed by Messrs. Kellogg and Maurice, of the firm of Kellogg & Maurice; T. C. Clarke, late of Clarke, Reeves & Co.; Charles Macdonald, of the Delaware Bridge Works, and George S. Fields, of the Central Bridge Co. The new company has leased the works of Kellogg & Maurice at Athens, Pa., as noted elsewhere, and will also, we understand, operate the shops in Buffalo now used by the Central Bridge Co. It will unite a large capital and the wide experience in bridge-building possessed by its members, together with the mechanical facilities for doing a very large amount of work in the most approved manner.

It is understood that Mr. A. Bonzano will continue his connection with the Phoenixville Works.

The official announcement of the new company has not yet been issued.

The Brooks Locomotive Works.

The Brooks Locomotive Works in Dunkirk, N. Y., on Feb. 22 celebrated the completion of their 1,000th locomotive. A large cannon was turned out by the works and at 7

o'clock the national salute of 13 guns pealed out on the morning air.

At 10 o'clock a salute of 15 guns was fired in honor of the fifteenth year of the works' existence, and while this was being fired the gates were opened and amid whistles and cheers the 1,000th locomotive was ushered out into the yard with President H. G. Brooks at the throttle, and bearing a number of passengers.

This engine is of the mogul pattern, designed for heavy freight service, and built for the Michigan & Ohio road. It was handsomely trimmed with red, white and blue bunting and numerous flags. The front of the locomotive was adorned by a large portrait of the President, Mr. H. G. Brooks; it was run out upon the Lake Shore tracks in the presence of a large number of people. Many congratulations were extended to Mr. Brooks and Mr. M. L. Hinman. At sunset the programme was finished by a salute of 33 guns.

These works were established in 1869 and have been in continuous and successful operation 14 years. The Master Mechanic of the road to which No. 1,000 goes, Mr. D. J. Durrell, was formerly an apprentice in the works, and sent his congratulations and best wishes on the occasion.

New Interlocking Signal System.

S. Warrick, Chief Draughtsman in the office of Chief Engineer A. B. Atwater, of the Chicago & Grand Trunk, has constructed and placed in operation at the crossing of the Chicago & Grand Trunk and the Michigan & Ohio roads at Battle Creek, Mich., a system of interlocking semaphore signals which is claimed to be very simple and to afford absolute safety. The Battle Creek Republican thus describes the arrangement:

"There are four upright bars which work in tumblers not unlike the Yale system, and are governed in their movement by a lock-bar device, working independently each upright lever, and which secures or releases the levers as their use may require. The levers are numbered, 1 to 4, inclusive. West of the crossing lever No. 1 controls M. & O. semaphore, and No. 2 controls C. & G. T. semaphore; east of the crossing No. 3 controls M. & O. and No. 4 C. & G. T. semaphores. When the clearance signal is given at any one of the four semaphores all the others are securely locked until the train for which it was given has cleared the crossing, thus preventing the possibility of clearances being given on both roads simultaneously. In compliance with a request of General Manager S. R. Callaway, Railroad Commissioner Gen. Innes and Deputy Commissioner Maj. Ransom spent an afternoon inspecting the working of the system, and both gentlemen speak in the most commendatory terms of the invention. Gen. Innes is preparing and will submit to the next Legislature a bill requiring all railway companies operating within the state to maintain a uniform system of crossing signals."

Weather Indications by Rail.

"We are going to have a new thing here in a few days," said an official of the Union depot. "What's that?" said the Leader man. "Well, it is this: Lieutenant Dunwoody, of the Signal Bureau, U. S. A., called on General Manager Pugh a few days since with reference to the introduction of a system of weather signals on its trains. The system includes an attachment to the outside of a baggage car of each train of a box containing certain signals, the significance of which would be known to the farmers along the line of the road. Thus, a red ball denotes higher temperature, a red crescent lower temperature, a red star stationary temperature, a blue ball general rain or snow, a blue crescent fair weather, and a blue star local rain or snow. Mr. Pugh ordered a trial accordingly, and the attachments are being made now, and in a short time we will see how they work."

—Pittsburgh Leader.

This system of sending out weather indications by train has been in use nearly a year on the Cleveland, Akron & Columbus road in Ohio.

Fast Time.

The fastest run on record between here and New Orleans was made by the special train over the Louisville & Nashville road, which left here at 9 o'clock Saturday morning and arrived at the Crescent City at 15 minutes past 1 yesterday afternoon, having made the entire distance of 921 miles in 28 hours and 15 minutes, or an average of about 33 miles an hour, including all stops.

In the account given of the progress and time being made by the Louisville & Nashville train in yesterday's paper, it was stated that the run between Bowling Green and Nashville, 71 miles, was made in 73 minutes. The time was correct; but the distance should have been given as 74 miles. The time made between Bowling Green and Nashville would, indeed, be hard to beat, as the train flew over the rails at a speed greater than a mile a minute.

The "Royal" train over the Cincinnati, New Orleans & Texas Pacific road which carried members of the Order of Cincinnati and their friends, arrived in New Orleans at 4:50 p. m. yesterday afternoon, having left here at the same hour as the "Ducal" train over the Louisville & Nashville.

President Scott of the Cincinnati, New Orleans & Texas Pacific road, who was seen yesterday at about noon, said, "Our route is shorter than the Louisville and Nashville's by about 96 miles, but we went out with the heaviest train, and speculation has been rife as to whether it wouldn't about equalize matters. The run over the Cincinnati Southern to Chattanooga was made in exactly 10 hours, the fastest time that has ever been made. At that point information reached Superintendent Carroll, who was on the special, that at mile-post 213, on the Alabama & Great Southern Division, a freight car had broken down on a trestle bridge and badly damaged it. Steps were immediately taken to repair the structure, and Roadmaster J. F. Hall and Bridge Superintendent Walsh were soon on the spot with large gangs and big timbers. Although the special was considerably delayed the break was repaired, and advices at noon from Meridian report everything lovely, with the prospect of a good run over the New Orleans & Northeastern." President Scott at noon yesterday thought that had it not been for the delay New Orleans would have been reached in 25 hours.

The run made by the Louisville & Nashville "Ducal" train was a remarkable one, being made in about nine hours less than the schedule time. The run from here to New York by the Pennsylvania limited train is made in 24 hours, or at an average rate of speed, including stops, of about 31½ miles per hour.

The Cincinnati, New Orleans & Texas Pacific train left Meridian at 11 a. m., and arrived in New Orleans at 4:50 p. m., making the run, a distance of 196 miles, in 5 hours and 5 minutes, deducting 45 minutes lost by the breaking of a draw-bar on one of the sleepers.—Cincinnati Enquirer, Feb. 25.

The Influence of Scale on the Evaporative Power of Boilers.

It is well known that locomotives seldom steam freely when new, though giving good results after a few weeks' working, and that many boilers have been found badly blocked up with scale without having given any indications of impaired efficiency in the generation of steam. The following quotation from *Mechanics* seems to confirm this idea, though that journal appears to doubt the correctness of the

results arrived at: "Experiments recently made by the Society for the Inspection of Steam Boilers of Munich, Germany, and also by the Société de Mulhouse, relative to the effects of incrustations on the evaporative power of boilers, have yielded rather peculiar results—so much so, in fact, as to suggest the possibility of error in some of the details of the tests. A series of comparative evaporating trials were made with purified water and a clean boiler surface on one hand, and with ordinary feed-water saturated with sulphate of lime on the other, this substance, as is well known, forming the main ingredient of nearly all incrustations. The principal test was continued for 195 hours without interruption, day and night. The firing and other conditions, as we understand, were kept as uniform as possible, and eight measurements of the water evaporated were made in order to ascertain the change caused by the increasing thickness of incrustation. Although, according to the particulars at hand, the scale finally averaged $\frac{1}{8}$ in. in thickness, no decrease in the evaporating power could be found, the deposit apparently exerting no influence whatever. In the Mulhouse tests the evaporation is said to have decreased slightly during the first few days, but to have then showed no further diminution. The results, we need scarcely say, are somewhat remarkable, and though by no means calculated to answer the question as to whether incrustations diminish the evaporating power of boilers negatively, will very probably stimulate further experiments in this direction."

Hot-Box Alarm.

An alarm signal for hot journals has been patented by Messrs. Oliver H. P. Cornelius and George H. Turner, of Turner, Ore. A thermometer is suitably placed in contact with a journal bearing, with which is connected a wire from a battery, so that when the mercury reaches a certain point a circuit will be closed and an alarm signal sounded.

Hadfield's Manganese Steel.

A new material of this name has been lately introduced by the Hadfield Steel Foundry Co., of Sheffield (England), a firm that has been especially successful in making tough cast-steel spoked wheels for locomotive trucks, street cars, etc. The *Engineer* says: "Manganese steel castings, including axes and other tools carrying a fine cutting edge, were exhibited at the meeting of the Institution of Mechanical Engineers, and were the subject of very great interest to those present, for these cast tools require no treatment of any kind when they come from the mold. They are very hard, but what is the more remarkable is that they are very tough at the same time. They require no hardening or tempering. The steel of these remarkable properties is made by thoroughly incorporating, under Mr. Robert Hadfield's patent, from 7 to 12 per cent. of rich ferro-manganese, containing about 80 per cent. of manganese. The applications of this remarkable metal are, it need hardly be said, innumerable. Tools of almost every description can now go straight from foundry to grinding and finishing rooms, while for the numerous engineering purposes to which steel is applied, for strength, toughness, and hardness are now added."

"This manganese steel is really a new steel, and a few years ago could not have been made. It is only through the new manufacture and introduction of higher percentages of ferro-manganese that it can be now made a commercial success. Manganese has been employed for many years in the manufacture of steel in various proportions, but it has been generally believed that anything exceeding 1 per cent. would render the metal worthless, and any further addition has been considered impracticable. Dr. Siemens held that the use of manganese was simply a cloak to cover the impurities in steel-making, and this was the general opinion of the steel trade. Messrs. Hadfield, however, engaged in a long series of experiments and tests, with the object of discovering its truth, and after a considerable expenditure of time and capital, discovered that by adding the ordinary ferro-manganese of commerce to iron or metal, either wholly or to a great extent decarbonized and refined, and treated by any of the ordinary processes, or to steel produced by such processes, in increased proportions sufficient to obtain or produce in the steel or decarbonized iron under treatment a percentage of manganese varying from 7 to 20 per cent., that the most beneficial results could be obtained. Such percentage is regulated according to the purpose for which the steel is required—for instance, to produce a steel suitable for railway purposes, they add about 11 per cent. of rich ferro-manganese, containing, say, 80 per cent. of manganese, thus obtaining a steel containing about 10 per cent. of manganese. For steel tools, about 12 per cent. is added. They pour this ferro-manganese into the molten steel under treatment, thoroughly incorporating it therewith, and then run it into ingot or other suitable molds, and allow it to cool, after which it is ready for use, as it requires neither tempering, rolling, forging or hardening."

"This treatment of steel in suitable proportions, according to requirements, appears to be novel, and renders the steel so manufactured harder, stronger, denser, and tougher than most steel now manufactured, even when forged and rolled. This steel may, however, be forged and rolled in the ordinary manner. For casting it has the advantage that it possesses greater freedom from honeycombs and similar defects; but the most peculiar property is its great toughness, combined with extreme hardness. It is through this that the hitherto indispensable process of rolling, forging, hammering, hardening and tempering may be dispensed with, thus effecting for many articles an enormous economy in time, labor, and expense. In casting its fluidity enables fine-steel castings to be made without misrunning, and approaching in smoothness iron castings. As far as has been yet observed, it does not, when cast, settle so much, nor does it draw like ordinary steel castings at the junction of the thick and thin parts. It would thus appear that steel so manufactured is specially adapted for making steel rolls to replace those of chilled metal and the larger edge tools, as these may be cast without requiring either forging or tempering, as they will be ready for use after grinding."

"It appears that this use of manganese renders the use of silicon to obtain soundness unnecessary. Among the samples of the steel placed on the table at the meeting of the Mechanical Engineers were a sample test bar containing 12 per cent. manganese, bent double when cold, though hard enough for turning iron; a sample from same ingot, tested by Mr. Vyle, and showing tensile strength of 42 tons per square inch, with 20.85 per cent. elongation; several hammered pieces; a manganese adze, containing 20 per cent. manganese, just as it left the mold; an axe, containing 12 per cent. manganese, just as cast in the rough, had chopped through $\frac{1}{2}$ -in. square iron. This, like the others, had not been hardened or tempered, only the edge ground. There was also a large size, about $1\frac{1}{2}$ -in., wood chisel, which had been used in the pattern shop fifteen months. This was of steel, containing 14 per cent. manganese; a corve wheel which had been tested with sixty heavy blows, and showed a peculiar crystallization. It contained 12 per cent. manganese. None of this steel has the slightest magnetic capacity; it is a very poor conductor of electricity, worse than

iron wire, yet fine drillings or scrapings from it are attracted by the magnet. We are informed that it does not seem to oxidize easily, though tested by Messrs. Hadfield in sea water. It is said not to corrode as much as ordinary steel, which is exactly what would not be expected, from the many statements to the effect that manganese made steel easily corroding. It is said not to tarnish easily, and it is found that heating it to a white heat and quenching in cold water instead of hardening it, causes it to become softer and tougher. The tested sample mentioned above was heated to a white heat and allowed to cool down on the shop floor."

"It is rather curious that the properties herein found should only be now found, and after finding a steel that is at the same time very hard, very tough, not attracted by the magnet, and with considerable elongation, we may expect anything to turn up to upset one's ideas as to the characteristics of steel materials."

If this account is strictly correct, and in nowise tinged with natural enthusiasm at a promising discovery, it would seem that a very valuable addition has been made to the materials available for railroad work. A steel that is at once hard, tough, strong and capable of being easily cast appears to be just the very material to make a good and trustworthy wheel for the coming big freight car, and could doubtless be applied to many other purposes.

Cost of Logging Railroads.

A firm which supplies engines and cars for logging railroads gives the following as an estimate of the cost of constructing and equipping such a road:

"The expense of a railroad and economical rolling stock of course varies for different localities, but with a medium fair country in which to build, and a road not exceeding 10 miles, a large mill can be comfortably kept in stock by one locomotive and 18 cars (standard make of locomotive and good spring cars), which cost \$7,000, and a railroad laid with 20-pound steel, \$3,000 per mile. The expense being divided as follows:

Steel rails, 20 pounds per yard, $3\frac{1}{2}$ tons at \$45.....	\$1,437.50
Ties, 2,040 at 8 cents.....	211.20
Splice joints, 32 per mile, at 25 cents each.....	88.00
Spikes, $14\frac{1}{2}$ kegs per mile \times 200 pounds = 2,940 pounds, at 25 cents.....	80.85
Grading.....	800.00
Laying ties, ballasting, etc.....	400.00
Total.....	\$3,017.55

The cost of transportation by such a road is given as follows, exclusively of skidding the logs to the track, which it says should not be for a greater distance than 1,000 ft.

Loading and unloading, per 1,000 ft.....	\$0.12
Fuel, either wood or coal.....	.10
Engineer, fireman and brakeman.....	.06
Track and trainmen.....	.11
Oil, repairs and expense.....	.10
Depreciation on track and rolling stock.....	.01
Total per 1,000 ft.....	\$0.50

These expenses are given very roughly, independent of distance hauled, which of course would not be very great on a road less than 10 miles long. Roads of this kind have greatly multiplied of late years in the pine lumber regions of the Northwest.

THE SCRAP HEAP.

Stealing a Ride in England.

A man wishing to travel free from Wolverhampton, England, to Liverpool, procured two stout pieces of rope which he fastened to the axles of a railway carriage, leaving a noose at the end of each. Into one noose he put his legs while he inserted his shoulders into the other. In this position he hung when the train started. The train was an express, and did not stop until Crewe was reached, which is about 70 miles from Liverpool. He was rather uncomfortable when the train began to move, but when it got into full swing he had real torture, and when he reached Crewe he was nearly dead with fright. Here he was taken into custody. To the magistrate who adjudicated on the case he explained that his sensations when swaying to and fro were something awful, and the effect of the sleepers as they rushed past him nearly robbed him of reason, and he "was afraid that every moment the rope would slip from his shoulders and hang him." The magistrate decided that he had had enough punishment, and remarking that he was not likely to repeat the experiment, sent him about his business.

This must be a good deal worse than riding on a truck, which American tramps sometimes do.

Whistles.

The lives of railroad kings greatly encourage small boys. They show how one can get up in the world by honest industry and saving habits.—*New Orleans Picayune*.

The New Haven Board of Health has prohibited the blowing of locomotive whistles within the city limits. If, now, the same agency should stop the whistling of the small boy, New Haven would be the place of all places to reside in.—*Lowell Citizen*.

An order of the Pennsylvania Railroad Co. forbids presents from employes to their superiors in the service. This protects the conductor or ticket agent who must spend \$25 for wine when he receives a \$7 brass-headed cane.—*New Orleans Picayune*.

Identifying Pass-Holders.

The necessity for adopting some system whereby the legitimate holder of an annual pass may be identified, or the illegitimate holder found out, is daily becoming more apparent. We are informed that a certain scapler, not a hundred miles from Boston, has exhibited a package of annuals, which were placed in his hands for sale or rent; and that so-called officials of alleged transportation lines, recently alluded to in these columns, have been in the habit of loaning (if their passes to friends, or travelling agents for manufacturing concerns. The system in vogue some years ago on the New York & New Haven Road, requiring that each annual, when presented to a conductor, should bear the signature of the person named, although not an absolute check, is productive of some good, because if the person presenting the pass is not personally known to the conductor or any doubt arises in his mind he asks the holder to write his signature in the conductor's signature book. To be sure, a signature written upon the cars when in motion might not pass on a bank check, but in most cases an intelligent conductor can judge by the general formation of letters whether the signature compares favorably or not.

Furthermore, many persons who would not hesitate using a pass bearing another's name would scarcely dare to place themselves open to a charge of forgery with its probable penalties.—*Pathfinder Railroad Guide, Boston*.

A Model Weather Vane.

A novel weather vane has just been put up over the West Philadelphia depot of the Pennsylvania Railroad. It is a miniature of engine No. 929, and is exactly like the original as the skill of the best artisans in the Philadelphia shops could make it. The engine taken as a model is one of the

fastest on the road, and is used as a special locomotive to haul special trains, pay cars, etc. The locomotive rests on two tracks about 9 ft. long and 6 in. apart. The track and ties can plainly be seen from Market street. The tender of the engine has the figures 929 painted on it, and the same number appears on both sides of the head-light. The cab is gilded just as in the original, and the sand-box, dome, bell, and smoke-stack have all been faithfully copied. The pilot points to the direction from which the wind is coming. The contrivance is attracting considerable attention from the passers by.

A Watchman's Presence of Mind.

At the early hour of 1:37 last Sunday morning No. 6, night express on the Albany & Susquehanna Railroad, reached Sidney on time. Leaving the depot, it pulled out on its way to Albany at the usual rate of speed. Arriving near the engine house, the engineer stopped the train as quickly as possible, and curtly asked the man why he had signalled him to stop.

This man was George Powney, employed in the yard at Sidney, as an engine wiper and night watchman of the yard engine, "Otegd." Just before the express left the depot he happened to step out of the engine house and discovered that the trestle, a short distance away, was on fire. He had no lantern, and not losing one second of time Powney, with admirable presence of mind, rushed into the engine house and carrying out his lighted torch signalled No. 6 to a halt.

It was discovered that the trestle was not only on fire, but completely undermined by the burning away of the timbers, and the rails were yet in their place, a perfect death-trap, into which the night express would inevitably have fallen with its precious load of human freight. The terrible results that might have followed can better be imagined than described. The express was full of passengers, and the embankment at the burning trestle is quite high; the cold was bitter, the night very dark, and the wind blowing furiously. The loss of life would have been appalling if No. 6 had attempted to pass the burning trestle. Mr. Barker and his men were called and made temporary repairs, which enabled the express to proceed on her way east four hours later. During the day a gang of carpenters from Oneonta completed the repairs.—*Sidney (N. Y.) Record*.

Blown from the Track.

A little after 7 o'clock yesterday morning a distressing and peculiar accident occurred a short distance this side of Georgetown, on the Colorado Central. The train had left for Denver and had on board about 30 passengers. The place where the accident occurred is on a curve near the point of a mountain, and where, when the wind blows, it comes down the gully for all it is worth. There is an immense amount of sand in that vicinity, and when the wind blows furiously it requires a large force of men to keep the track cleared so that trains may pass, as it drifts like snow and is much more formidable.

Yesterday morning the wind blew with unusual force. Just as the train struck that portion of the road, but a short distance from the suburbs of Georgetown the fireman looked back and saw the rear end of the rear coach raised bodily from the track. He yelled to the engineer and they both jumped from the engine. Just then the wind roared past and the whole train was lifted bodily and turned completely over, landing about 10 ft. from the track and without disturbing a rail or tie. Then there was great confusion. The howling, roaring wind and the yells and screams of the men and women who had been so suddenly and unceremoniously upset, made a scene of unparalleled confusion. Seven of the passengers were injured.

About three years ago a similar accident occurred at the same place, but no one was injured. The passengers of the belated train arrived in Denver about 10 hours late.—*Denver (Col.) News, Feb. 24*.

The Baggage Smasher's Mistake.

A queer incident occurred at the Baltimore & Ohio depot yesterday morning. A large number of emigrants were being taken to the Pittsburgh & Lake Erie depot in an express wagon. A woman in the party handed the driver a short bundle, apparently clothes, around which was wrapped some heavy cord. The driver, supposing that it was clothing, hurled it under the seat of the vehicle. His action was quickly followed by the woman clambering in the wagon, seizing the bundle and screaming at the top of her voice, "Mein Gott! Mein kindlein! it is killed!" The string was removed from the package and the infant was found more scared than hurt. The mother of the child threatened the driver with violence for his action, and it was with difficulty that she was restrained from assaulting him.—*Pittsburgh Chronicle-Telegraph*.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Cleveland, Columbus, Cincinnati & Indianapolis, annual meeting, at the office in Cleveland, O., March 5, at 10:30 a. m. Transfer books close Feb. 18.

Illinois Central, annual meeting, at the office in Chicago, March 12, at noon.

Missouri Pacific, annual meeting, at the office in St. Louis, March 11, at 9 a. m. Transfer books close Feb. 9.

Morgan's Louisiana & Texas, annual meeting, at the office in New Orleans, April 7, at noon.

Pennsylvania, annual meeting, at Musical Fund Hall in Philadelphia, at 11 a. m. on March 11.

Texas & Pacific, adjourned annual meeting, in Marshall, Tex., April 15.

Wabash, St. Louis & Pacific, annual meeting, at the office in St. Louis, March 11. A special meeting will also be held at the same place March 22. Transfer books will be closed from Feb. 9 to March 21.

Dividends.

Dividends have been declared as follows:

Chicago, St. Paul, Minneapolis & Omaha, $1\frac{1}{2}$ per cent., quarterly, on the preferred stock, payable April 21. Transfer books close March 31.

El River (leased to Wabash, St. Louis & Pacific), 1 per cent., quarterly, payable March 5.

Sunbury & Leicestershire (leased to Pennsylvania Railroad Co.), 8 per cent., semi-annual, payable April 1.

West Jersey, 3 per cent., semi-annual, payable March 15, in scrip convertible into new stock.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

National Association of General Passenger & Ticket Agents, regular annual meeting, at the Burnett House in Cincinnati, O., at 11 a. m., Tuesday, March 18.

General Time Convention, Spring meeting, at the Grand Hotel in Cincinnati, O., at 11 a. m., on Wednesday, April 9.

Southern Time Convention, Spring meeting, at No. 46

Bond street, New York, at 11 a. m., on Wednesday April 16.

Railway Car Accountants' Association, annual convention, in Richmond, Va., on Tuesday, May 20.

Western Railway Club.

A number of railroad men, including master mechanics and car-builders of nearly all the roads running into Chicago, met at the Grand Pacific Hotel in that city, Feb. 27, for the purpose of forming a club, the object of which is to hold monthly meetings for the discussion of subjects of interest to the members, upon the same plan as the Car-Builders' Club in New York and the New England Railroad Club in Boston. A temporary organization was effected by the election of Mr. Joseph Townsend as Chairman and William Forsyth as Secretary. It was decided to form a club to be known as the Western Railway Club, with headquarters in Chicago. The following committees were appointed:

On by-laws and organization—F. A. Bissell, William Forsyth and Joseph Townsend.

On procuring rooms for meetings, etc.—L. E. Johnson, B. K. Verbruyck and Joseph Rogan.

On register—H. C. Buboup, C. Ettinger and R. B. Couch. It was decided to hold regular meetings on the third Wednesday of each month. The meeting then adjourned, subject to the call of the chairman.

ELECTIONS AND APPOINTMENTS.

Albany & Raleigh.—The officers of this company are: President, Herman R. Baltzer, New York; Superintendent, James H. Petty, Tarboro, North Carolina.

Atchison, Topeka & Santa Fe.—Topeka dispatches say that the following appointments are announced: General Manager, A. A. Robinson, late General Superintendent and Chief Engineer; Assistant General Manager, G. B. Harris; General Counsel, George W. McCrary, late United States Circuit Judge and formerly Secretary of War.

Boston & Albany.—The new board has re-elected William Bliss, President; J. A. Rumrill, Vice-President; Charles E. Stevens, Treasurer.

Boston & Providence.—Mr. George L. Greene has been appointed Superintendent of Transportation at Providence.

Camden & Atlantic.—At the annual meeting in Camden, N. J., Feb. 28, the following directors were chosen: Richard D. Barclay, James B. Dayton, Enoch A. Doughty, Thomas H. Dudley, Wm. L. Elkins, Samuel Fox, John B. Hay, Wm. C. Houston, Crawford Miller, John Pearce, Edmund G. Reed, Charles P. Stratton, Frank Thomson. The board re-elected Wm. L. Elkins President; Wm. J. Sewell, Vice-President; Daniel M. Zimmerman, Secretary; Wm. Taylor, Treasurer.

Chicago, St. Louis & New Orleans.—At the annual meeting in New Orleans, March 5, the following directors were elected: J. C. Clarke, Adolph Schreiber and D. B. Maury, of New Orleans; W. H. Gebhard, W. H. Osborne, Stuyvesant Fish, W. B. Catlin, John Elliott and E. H. Harrison, of New York; N. P. Moss, of Kentucky; R. P. Neely, of Tennessee; W. S. Harris, of Mississippi. The road is leased to the Illinois Central.

Chicago, St. Louis & Western.—The officers of this company (successor to the Chicago, Pekin & Southwestern) are: Treasurer, F. E. Hinckley; General Superintendent, Albert H. Crocker; General Passenger Agent, B. T. Lewis; General Freight Agent, J. V. Mahoney; Auditor, H. P. Radley. Offices in Chicago.

Cincinnati, Hamilton & Dayton.—Mr. F. S. Finrock has been appointed Master of Transportation in place of Albert I. Griggs, who has gone to the Alabama Great Southern.

Cincinnati, New Orleans & Texas Pacific.—Mr. Albert I. Griggs has been appointed Master of Transportation of the Alabama Great Southern Division, with office at Birmingham, Ala. He was recently on the Cincinnati, Hamilton & Dayton road.

Cincinnati, Wheeling & New York.—Mr. E. C. Winstanley has been appointed Assistant to the President, with office in Newark, Ohio.

Cleveland, Columbus, Cincinnati & Indianapolis.—At the annual meeting in Cleveland, O., March 5, the following directors (one-third of the board) whose terms then expired, were re-elected: James Barnett, Stevenson Burke, J. H. Devereux, T. P. Handy.

Cleveland, Youngstown & Pittsburgh.—Mr. Robert Martin, of Steubenville, O., has been appointed Receiver of this road.

Danville, Mocksville & Southwestern.—The officers of this company are: President, Thomas R. Sharp, New York; Superintendent, H. M. Shriver, Leaksville, North Carolina.

Delaware, Lackawanna & Western.—The following circular from the office of President Sloan is dated New York, March 1:

"B. A. Hegeman has been appointed Traffic Manager of this company, having charge of contracts, agreements, and business relations with other roads.

"William S. Sloan has been appointed General Freight Agent of this company, having charge of all matters pertaining to that department.

"W. F. Holwill has been appointed General Passenger Agent of this company, having charge of the passenger department."

Mr. Hegeman has been General Freight Agent and Mr. Holwill General Passenger Agent for a number of years. The office of Traffic Manager is a new one on this road. Mr. Sloan is a son of Samuel Sloan, President of this company.

Denver & Rio Grande.—Col. R. E. Ricker has been appointed General Superintendent in place of Mr. R. B. Cable, resigned. Col. Ricker has served as Superintendent of Motive Power of the Pennsylvania Railroad, General Superintendent of the Terre Haute & Indianapolis, and Superintendent and Chief Engineer of the Central Railroad of New Jersey. Since leaving the Central Col. Ricker has been in the railroad supply business.

Eureka & Palisade.—Mr. B. Gilman has been appointed General Superintendent in place of P. Everts.

Fargo, Larimore & Northern.—The officers of this new company are: President, Thomas S. Edison; Vice-President, W. A. Kindred; Secretary, A. P. Hendrickson; Treasurer, W. G. Woodruff. Office in Fargo, Dak.

Florida Railway & Navigation Co.—This company, formed by the consolidation of the Florida Central & Western, the Florida Transit & Peninsula, the Fernandina and Jacksonville and the Leesburg & Indian River companies, was organized at Jacksonville, March 1, by the election of the following directors: B. S. Hemming, J. M. Schumacher, Jacksonville, Fla.; C. R. Cummings, F. W. Peck, Chicago; Elijah Smith, Boston; W. Bayard Cutting, E. N. Dicker-

son, E. H. Harriman, H. L. Horton, L. M. Lawson, Thomas C. Platt, New York; C. D. Willard, David L. Yulee, Washington.

Hartwell.—At a meeting held in Hartwell, Ga., last week the following officers were elected: J. H. Jones, President; E. B. Benson, W. F. Bowers, E. Berkely, G. S. Barnum, C. W. Cheers, directors.

Housatonic.—At the annual meeting in Bridgeport, Feb. 29, the following directors were chosen: Wm. H. Barnum, Lime Rock, Conn.; A. B. Mygatt, New Milford, Conn.; Wm. E. Downs, Birmingham, Conn.; Charles K. Averill, Wm. D. Bishop, Horace Nichols, Bridgeport, Conn.; David S. Draper, Edward Leavitt, John B. Peck, New York. The board re-elected Wm. H. Barnum President; David S. Draper, Vice-President; Charles K. Averill, Secretary and Treasurer.

Houston, East & West Texas.—Mr. C. A. Noblitt has been appointed Chief Engineer, with headquarters at Houston, Texas.

Indiana, Bloomington & Western.—Mr. C. W. Hensdale has been appointed Train-Master of the Middle Division in place of W. H. Van Tassel, transferred to the Ohio Southern road.

Indiana, Illinois & Iowa.—The present list of officers of this road is as follows: A. W. Spies, President; Thomas Thacher, Vice-President; F. M. Drake, General Manager; T. P. Shouts, General Superintendent, General Freight, Passenger and Purchasing Agent; F. E. Drake, Auditor and Treasurer; H. M. Curtis, Secretary; J. D. Carle, Chief Engineer; D. G. Henshaw, Train-Master and Car Accountant.

Institute of Mining Engineers.—The officers chosen at the annual convention in Cincinnati are as follows: President, James C. Bayles, New York; Vice-Presidents, Eckley B. Cox, Drifton, Pa.; Thomas Egleston, New York; Edwin C. Pechin, Cleveland. Managers, Edward S. Cook, Pottstown, Pa.; Frank Firmstone, Easton, Pa.; G. W. Maynard, New York. Treasurer, T. D. Rand, Philadelphia; Secretary, Kossiter W. Raymond, New York.

Kansas City, Des Moines & Northern.—The officers of this new company are: President, James H. Birch, Clinton County, Mo.; Vice-President, Henry S. Hawley, Chicago; Secretary, D. W. McElroy, Keokuk, Ia.; Treasurer and Assistant Secretary, Henry T. Glover, Chicago.

Kentucky Central.—A circular from General Manager C. W. Smith announces the appointment of the following officers of the Chesapeake & Ohio Railway, with headquarters at Richmond, as officers to perform corresponding duties on the Kentucky Central: C. H. Hudson, Superintendent of Transportation; H. W. Fuller, General Passenger Agent; B. S. Fitch, General Freight Agent; T. L. Chapman, Superintendent of Motive Power; D. A. Sweet, Assistant to General Manager; R. H. Fisher, Auditor of Receipts; W. H. Lowry, Auditor of Disbursements; John Garrett, Cashier; M. B. Leonard, Superintendent of Telegraph; A. S. Emmons, Purchasing Agent; J. W. Hopkins, Coal and Fuel Agent; C. Lorraine, General Baggage Agent.

Lehigh Valley.—Mr. Peter C. Doyle has been appointed General Northern Agent, with office in Buffalo, N. Y. He has been connected with the road for a number of years.

Lehigh & Wilkes-Barre Coal Co.—At the annual meeting last week the following were elected: President, H. A. Tillinghast; directors, Franklin A. Comly, John Kean, George deB. Keim, Edward C. Knight, Henry S. Little, Benjamin Williamson.

Louisville, New Albany & Chicago.—Mr. H. O. Nourse has been appointed Auditor and Purchasing Agent in place of G. C. Breed, resigned. Mr. Nourse has been for some time Chief Clerk to Mr. Breed.

Michigan & Ohio.—Mr. J. W. Richards has been appointed Cashier in place of George Naylor, resigned.

New York, Providence & Boston.—The Secretary of this company, in addition to the duties now pertaining to his position, is appointed Auditor of Accounts, and, in connection with the General Auditor, will prescribe all forms and direct the manner in which all the accounts and books of the company shall be kept.

He is especially charged with the auditing of ticket reports, and the cancellation of tickets which have been used; and for this purpose the clerks now employed in such duties will be placed under his immediate control and supervision.

The General Ticket Agent will cause to be printed, and issued to the proper offices, all tickets, excursion and otherwise, with the necessary instructions. He will issue all rates, make arrangements with connecting-lines, and generally will have charge of all the ticket business, with the exceptions above noted. All tickets hereafter issued must be consecutively numbered, and any now outstanding not so numbered will be called in. The public advertising will be under the control and supervision of the general ticket agent.

Supplies and materials of all kinds for the current use of the road and ferry-boats must be purchased by the Purchasing Agent on the requisitions in due form from the proper parties; and a certification by the party receiving the material that it has been so received, together with a certification by the Purchasing Agent that the prices and quantities are correct, must be attached to the voucher before payment.

Northern Central.—At the annual meeting in Baltimore, Feb. 28, the following directors were chosen: George B. Roberts, Wistar Morris, Samuel C. Huey, John P. Green, Edmund Smith, George Small, B. F. Newcomer, S. M. Shoemaker, J. N. Hutchinson, Dell Noblitt, Harry Walters, Henry Gilbert. Upon the organization of the board, George B. Roberts was chosen President; Frank Thomson, Vice-President; Stephen W. White, Secretary; J. S. Lieb, Treasurer, and A. J. Cassatt a director, in place of Mr. Roberts, as the President of this company, under its charter, is not a director, although a member of the board.

Northern Illinois.—The directors of this new company are: C. J. Devlin, E. V. Holcomb, Archibald Means, Wm. R. Merriam, Wm. E. Moore, E. N. Saunders. Office in Chicago.

Ohio & Guyandot.—The directors of this company have elected officers as follows: President, A. D. Smith, Pittsburgh, Pa.; Vice-President and Manager, J. H. McCreery, Pittsburgh; Secretary and Treasurer, W. L. Vankirk, Pittsburgh; General Solicitor, J. M. Layne, Huntington, W. Va.; Chief Engineer, Jonathan Barritt.

Ohio Southern.—Mr. W. H. Van Tassel has been appointed Superintendent in place of D. R. Ennis, resigned.

Oxford & Henderson.—The officers of this company are: President, A. H. A. Williams, Oxford, N. C.; Superintendent, James A. White, Henderson, North Carolina.

Parsons & Southern.—The directors of this new company are: G. W. Hawk, Angell Matthews, C. H. Kimball, Lee Clark, J. J. Henderson, Parsons, Kan.; J. B. Jones, John C. Murphy, Daniel Reed, H. C. Blanchard, Altamont, Kansas.

Pennsylvania Railroad Leased Lines.—Officers have been elected as below for the companies named, whose properties are leased to the Pennsylvania Railroad Co.: **Frederick & Pennsylvania Line.**—President, Charles E. Trail; Vice-President, H. H. Carter; Secretary, Stephen W. White; Treasurer, John S. Leib. **Girard Point Storage Co.**—President, Joseph D. Potts; directors, D. B. Cummins, W. L. Elkins, Clement A. Grisco, H. H. Houston, George B. Roberts, Frank Thomson. **Southwest Pennsylvania.**—President, J. N. DuBarry; directors, W. R. Davidson, John P. Green, John K. Ewing, William J. Howard, George F. Huff, G. B. Roberts, William A. Patton, B. F. Ruff, N. P. Shortridge, Edmund Smith, George A. Torrence, J. F. Wentling.

Philadelphia, Wilmington & Baltimore.—The directors chosen at the annual meeting last month are as follows: Benjamin F. Newcomer, Samuel M. Shoemaker, Baltimore; Jacob Tomp, Port Deposit, Md.; Christian Feibler, Charles Warner, Wilmington, Del.; Samuel M. Felton, Thurlow, Pa.; J. N. DuBarry, J. P. Green, Isaac Hinckley, Wistar Morris, Henry M. Phillips, George B. Roberts, Wm. Sellers, Edmund Smith, Frank Thomson, Philadelphia. The officers chosen by the board are: President, Isaac Hinckley; Vice-President, Frank Thomson; Secretary and Treasurer, Robert Craven.

Reading & Pottsville.—Mr. Joseph C. Bright, of Pottsville, Pa., is President of this new company.

St. Joseph Valley.—The present list of officers of this company is as follows: George H. Richards, President; R. D. Dix, Vice-President; E. T. Chase, General Manager; J. H. Matthews, Secretary and General Freight and Passenger Agent; J. L. Richards, Auditor; A. F. Ross, Treasurer. General office at Berrien Springs, Michigan.

Sinaloa & Durango.—Mr. George S. Skilton has been appointed Chief Engineer and General Superintendent of this road in place of H. M. Fickinger, resigned. Mr. Skilton was one of the pioneers of the Mexican Central road, and Chief Engineer of the First Division. His headquarters will be at Culiacan in the state of Sinaloa, Mexico.

Stillwater & St. Paul.—This company, whose road is leased to the St. Paul & Duluth Co., has elected James Smith, Jr., President; F. S. Harris, Secretary and Treasurer.

Sylvania & Rocky Ford.—At a meeting held recently in Sylvania, Ga., the following directors were chosen: President, Maj. D. C. Bacon; Vice-President, Col. John C. Dell; Secretary and Treasurer, Col. R. J. Davant; Assistant Secretary, Judge John F. Lovett, Jr.

Texas Western.—Mr. Henry Hatch has been appointed General Superintendent, with office in Houston, Texas.

Toledo & Indianapolis.—The officers of this road are: Receiver, David Robison, Jr.; Acting Superintendent, M. J. Clark; Auditor and General Freight and Ticket Agent, J. M. O'Boyle. Offices in Toledo, Ohio.

Union Pacific.—At the annual meeting in Boston, March 5, the following directors were elected: John Sharp, Salt Lake, Utah; S. H. H. Clark, Omaha, Neb.; Grenville M. Dodge, Council Bluffs, Ia.; Hugh Riddle, Chicago; James Rumrill, Springfield, Mass.; Charles Francis Adams, Jr., F. L. Ames, Elisha Atkins, Ezra H. Baker, F. Gordon Dexter, Boston; Sidney Dillon, David Dows, Andrew H. Green, Jay Gould, Russell Sage, New York. Messrs. Riddle (late President of the Rock Island) and Rumrill (Vice-President of the Boston & Albany) are new directors, replacing Solon Humphreys and Augustus Schell. The board re-elected Sidney Dillon President; Elisha Atkins, Vice-President; Henry Macfarland, Secretary.

Western Transit Co.—The officers of this company are: President, G. L. Douglas, New York; Vice-President and General Manager, S. D. Caldwell, Buffalo, N. Y.; Secretary, H. C. Duval, New York; Treasurer, E. V. W. Rossiter, New York.

West Jersey.—At the annual meeting in Camden, N. J., March 4, the following directors were chosen: George Wood, J. N. DuBarry, N. Parker Shortridge, Edmund Smith, Charles P. Stratton, John P. Whitney, Henry D. Welsh, George B. Roberts, Lewis Mulford, Coleman F. Leaming, Chas. E. Elmer, John M. Moore, Thomas H. Dudley. The board elected George B. Roberts President; Wm. J. Sewell, Vice-President; Dr. Wm. Taylor, Secretary and Treasurer.

Officers for the company's leased lines were chosen as follows: **West Jersey & Atlantic.**—George Wood, President; Wm. J. Sewell, Vice-President; Edward Bettie, Secretary; Dr. Wm. Taylor, Treasurer. **Woodstown & Swedesboro.**—President, Wm. J. Sewell; Secretary and Treasurer, Dr. Wm. Taylor.

PERSONAL.

—Mr. D. R. Ennis has resigned his position as Superintendent of the Ohio Southern road.

—Mr. B. M. Temple has resigned his position as Chief Engineer of the Gulf, Colorado & Santa Fe road.

—Mr. W. W. Daniel has resigned his position as Assistant General Freight Agent of the Columbus, Hocking Valley & Toledo road.

—Mr. Frank E. Snow, for several years past General Agent of the Wabash, St. Louis & Pacific road at Detroit, Mich., has resigned that position.

—Capt. Wallace McGrath has resigned his position as Chief Engineer of the Ohio River road, and will take up his residence in Erie, Pa., for the present.

—The position of General Superintendent of the Michigan & Ohio has been, it is said, offered to and declined by R. H. Bromley, General Agent of the Lake Shore road at Jackson, Mich.

—Mr. R. B. Cable has resigned his position as General Superintendent of the Denver & Rio Grande road. Mr. Cable was formerly for many years connected with the Erie road.

—Mr. Wallace H. Prouty has resigned his position as Assistant General Passenger Agent of the Indiana, Bloomington & Western road. He has been connected with the road for 13 years past.

—Mr. N. R. Harkins, for a number of years Superintendent of the Middle Division of the New York, Ontario & Western road (from Middletown, N. Y., to Norwich) has resigned his position.

—Mr. A. I. Griggs, for many years Master of Transportation of the Cincinnati, Hamilton & Dayton road, has resigned that position to accept one on the Cincinnati, New Orleans & Texas Pacific road.

—Mr. G. C. Breed has resigned his position as Auditor of the Louisville, New Albany & Chicago road. Mr. Breed

was formerly with the Louisville & Nashville road, and has had a very wide and varied experience in railroad work.

—Mr. Andrew Anderson has resigned his position as Secretary to President Raoul of the Central Railroad of Georgia, and will go to Louisville, Ky., as Secretary to Vice-President Smith of the Louisville & Nashville road. Mr. Anderson was on that road before going to Georgia.

—Mr. H. M. Fickinger has resigned his position as General Superintendent of the Sinaloa & Durango road in Mexico, and will return to the United States. Mr. Fickinger has done excellent work in a very difficult position. Of his labors when severe damage was recently done to the road by storm *El Correo de Occidente*, of Culiacan, says: "In the repairs of the road he took a great part, and those repairs were made with an economy unusual among Americans, who in this work are more expensive than skillful, although it is well known that they are not wanting in skill."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows

Two months ending Feb. 29:				
	1884.	1883.	Inc. or Dec.	P. c.
Chi. & Alton.....	\$1,232,711	\$1,203,766	I.	\$28,945 2.4
Chi. & East Ill.....	234,910	251,393	D.	16,483 6.5
Chi. Mil. & St. P.....	2,785,060	2,619,242	I.	165,818 6.3
Chi. & Northw.....	2,899,997	2,668,909	I.	231,087 8.6
Little R. & Ft. S.....	76,111	84,583	D.	8,472 10.0
Little R. M. R. & Texas.....	56,635	71,640	D.	15,005 20.9
Long Island.....	272,974	258,482	I.	14,492 5.6
Louisv. & Nashv.....	2,029,555	2,128,435	D.	98,880 4.6
Mil. L. S. & W.....	146,225	130,975	I.	15,250 18.5
Northern Pacific.....	1,040,271	997,807	I.	42,464 4.2
Rich. & Danville.....	504,980	588,157	I.	83,177 16.5
St. L. & San Fran.....	849,778	514,584	I.	335,194 65.2
St. P. M. & Man.....	856,340	879,296	D.	22,956 2.6
Tol. Cin. & St. L.....	165,000	.....	.....	.....
Month of January:				
Denver & R. G.....	\$487,201	\$418,300	I.	\$68,901 16.5
Net earnings.....	72,225	118,608	D.	46,383 30.6
West Jersey.....	60,300	61,820	I.	1,520 2.5
Net earnings.....	24,900	21,574	I.	3,326 15.4
Month of February:				
Chi. & Alton.....	\$571,918	\$557,380	I.	\$14,538 2.6
Chi. & East Ill.....	108,819	112,469	D.	3,650 3.3
Chi. Mil. & St. P.....	1,318,000	1,257,048	I.	60,952 4.9
Chi. & Northw.....	1,437,500	1,311,300	I.	126,200 9.6
Little R. & Ft. S.....	34,111	34,041	I.	70 0.2
Little R. M. R. & Texas.....	24,635	33,640	D.	9,005 36.5
Long Island.....	139,083	128,589	I.	10,494 8.1
Louisv. & Nashv.....	992,555	1,039,700	D.	47,145 4.7
Mil. L. S. & W.....	102,120	64,593	I.	37,527 58.1
Northern Pacific.....	518,300	299,611	I.	218,689 72.9
Rich. & Danville.....	328,100	328,400	D.	300 0.1
St. L. & San Fran.....	339,700	236,200	I.	103,500 39.6
St. P. M. & Man.....	407,155	389,755	I.	17,400 4.5
Tol. Cin. & St. L.....	75,000	.....	.....	.....
Third week in February:				
Chi. & Alton.....	\$57,790	\$50,787	I.	\$7,003 13.8
Chi. & W. Mich.....	26,063	27,511	D.	1,448 5.5
Fla. Cent. & W.....	8,958	8,700	I.	258 3.0
Fla. Transit & P.....	13,380	9,658	I.	3,722 38.4
Ill. Central.....	256,500	271,838	D.	15,338 5.6
Ind. Bloom. & W.....	56,830	59,136	D.	2,306 4.0
Pro. Dec. & Ev.....	13,774	9,453	I.	4,321 45.5
Wabash, St. L. & Pacific.....	301,108	276,303	I.	24,805 9.0

Weekly reports of earnings are generally estimated in part, and are subject to correction by later statements.

Grain Movement.

For the week ending Feb. 23 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1877.....	2,555,950	1,315,110	2,275,036
1878.....	2,459,460	1,953,113	3,080,356
1879.....	3,390,962	1,737,475	4,389,067
1880.....	3,943,472	2,320,154	3,926,011
1881.....	2,301,492	1,866,909	3,427,216
1882.....	1,702,425	1,814,838	1,721,113
1883.....	4,288,709	3,046,453	3,139,735
1884.....	4,698,174	2,749,542	2,120,538

Thus the receipts of the Northwestern markets for the week this year were 410,000 bushels (9½ per cent.) more than in the corresponding week last year, when they were larger than in any previous year. They were also 526,000 more than in the previous week of this year. The increase is at Toledo, Peoria and St. Louis, notwithstanding which the receipts at Chicago and Milwaukee were 54 per cent. of the whole.

The shipments of these markets were 297,000 bushels less than in the corresponding week of last year, but were much larger than in any previous year. Of these shipments 111,347 bushels (4 per cent.) went down the Mississippi.

The Atlantic receipts of the week this year, however, were 1,019,000 bushels (32½ per cent.) less than in the corresponding week of last year, and smaller than in any other year of the eight except 1882. They were, however, more than one-fourth larger than in the other two February weeks. The increase over the week two previous was substantially all at New Orleans, which received 666,212 bushels—more than any other port, 33 per cent. of the whole, and the largest receipts New Orleans has had since May of last year.

Exports from Atlantic ports for this week ending Feb. 23, for five successive years have been:

	1880.	1881.	1882.	1883.	1884.
Flour, bbls.	54,223	133,563	134,304	170,270	102,268
Grain, bu.	2,360,207	2,402,354	1,569,851	1,890,958	1,145,020

The exports of the week this year, including flour, were 1,052,000 bushels (40 per cent.) less than last year, 560,000 less than in 1882, 1,398,000 less than in 1881, and 999,000 bushels less than in 1880.

Coal.

Coal tonnages for the week ending Feb. 23 are reported as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Anthracite.....	417,719	370,989	I.	46,730 12.6
Eastern bituminous.....	147,319	170,725	D.	23,406 13.7
Coke.....	60,220	48,015	I.	12,205 25.4

Anthracite trade has been a little more active, owing to an increase of domestic demand resulting from the prospect of a continuance of cold weather.

The falling off in bituminous trade is largely in those districts which are chiefly dependent upon iron furnaces and rolling mills for a market.

The coal tonnage of the Pennsylvania Railroad for the week ending Feb. 23 was:

	Coal.	Coke.	Total.
Line of road.....	128,353	52,050	180,403
From other lines.....	8,304	8,161	16,465
Total.....	136,657	60,211	196,868

The total tonnage this year to Feb. 23 was 1,825,118 tons

against 1,855,753 tons to the corresponding date in 1883, a decrease of 30,635 tons, or 1.7 per cent.

In the report of the Colorado Coal & Iron Co. for the year ending Dec. 31, 1883, it is stated that the company mined during the year 599,000 tons of coal, against 350,894 tons in 1881 and 512,303 in 1882; 125,000 tons of coke were produced, against 47,640 tons in 1881 and 90,256 tons in 1882.

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the two months ending March 1 was:

	1884.	1883.	Inc. or Dec.	P. c.
S. Amboy for shipment.....	84,627	124,471	D.	39,844 32.1
Local points on N. J. divs.....	134,137	132,087	I.	2,050 1.5
Co.'s use on N. J. divs.....	31,286	25,364	I.	5,922 23.6
Total.....	250,050	281,922	D.	31,872 11.3

Of the tonnage this year 202,016 tons were from the Lehigh Region and 48,034 tons from the Wyoming Region.

Cumberland coal tonnages for the two months ending March 1 are reported by the Cumberland *Civilian* as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Shipments from mines.....	178,334	203,505	D.	25,171 12.3
Cumberland & Penna.....	178,334	203,505	D.	25,171 12.3
George's Creek & Cumb.....	26,544	50,374	D.	23,830 47.5
West Va. Central & Pitts.....	50,178	39,675	I.	10,503 48.8
Direct to Balt. & Ohio.....	259	847	D.	588 69.2
Total.....	204,315	254,401	D.	50,086 19.6

Shipments of oil refined at Creek refineries (reduced to its equivalent in crude) were: New York, 80,171; Philadelphia, 1,280; Baltimore, 16,412; Boston, 53,199; local points, 56,462; total, 207,524 barrels.

The Reporter says: "The position of affairs in the producing regions does not indicate that any marked change in the present tendency is to take place. That is to say, there is nothing to show that the decline in production will be checked. Large wells have been developed since the beginning of the year, but so far none of these have established the opening of a producing field that will prove dangerous to the producers' interests. The new wells in the Grandin and Balltown districts have shown the qualities of their predecessors in declining rapidly, as well as failure to respond to the subsequent and liberal use of the torpedo. If danger is to be apprehended from any direction it is from the present developments going on near the Sheffield, Warren County, regions, known as the Henry's Mills field."

"Here the opening of the McKinney, the Porter, the McCalmont and other wells exerted a temporary effect on value during January and February, and it remains for further prospecting to determine whether the field referred to contains an extended area of rich territory or not. The latter supposition is as yet borne out by the rapid decline of nearly all the new wells opened. The present yield of this new field is about 1,200 barrels daily, an amount which must soon be considerably increased, as a group of new wells will be due before the close of February. The chances are that if any decided increase in production comes it must come through increased activity in the old rather than development of new oil fields."

Local deliveries are included in the Baltimore & Ohio shipments. No shipments have yet been made by canal.

Coal tonnage passing over the Huntington & Broad Top Mountain road for the two months ending March 1 was:

	1884.	1883.	Inc. or Dec.	P. c.
Broad Top coal.....	30,896	43,247	D.	12,351 28.7
Cumberland coal.....	41,337	72,197	D.	30,860 42.8
Total.....	72,233	115,444	D.	43,211 37.4

The Broad Top coal is mined on the line of the road; the Cumberland is carried through for the Pennsylvania Railroad.

The coal tonnage of the Chesapeake & Ohio Railroad for January was as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Coal.....	73,838	71,180	I.	2,658 3.7
Coke.....	5,702	9,448	D.	3,746 39.6
Total.....	79,540	80,628	D.	1,088 1.3

Of the coal shipments this year 23,701 tons were carried to Newport News for shipment by water.

At a meeting held at Connellsville, Pa., Feb. 29, the proposition made by the large operators to pool the coke product of the region was accepted by a number of the smaller operators, although some of the latter still hold out. Under the plan proposed all the coke produced is to be sold through the pool agents, who are to receive a commission varying with the price.

Cotton.

Cotton movement for the six months of the crop year from Sept. 1 to Feb. 29 is reported by the *Commercial and Financial Chronicle* as follows, in bales:

	1883-84.	1882-83.	Inc. or Dec.	P. c.
Receipts.....	2,372,355	3,029,670	D.	657,315 17.1
Shipments.....	2,324,282	2,721,215	D.	304,933 14.5
Stock, Feb. 29.....	227,265	308,417	D.	81,152 26.3
Exports:				
Receipts.....	4,340,218	4,901,714	D.	561,496 11.5
Exports.....	2,940,378	3,304,837	D.	364,459 9.9
Stock, Feb. 29.....	948,594	926,973	I.	21,621 2.3

It must be remembered that a large part of the receipts at interior markets appear again in the receipts at the seaports to which they are shipped by rail from the point of first receipt.

After a statement showing as nearly as possible the actual receipts from plantations, the *Chronicle* says: "The statement shows—1. That the total receipts from the plantations since Sept. 1, 1883, were 4,518,327 bales; in 1882-83 were 5,193,646 bales; in 1881-82 were 4,356,135 bales.

"2. That, although the receipts at the outports the past week were 76,487 bales, the actual movement from plantations was only 49,802 bales, the balance being taken from the stocks at the interior towns. Last year the receipts from the plantations for the same week were 122,314 bales and for 1882 they were 32,632 bales.

"In the table below we give the receipts from plantations in another form, and add to them the net overland movement to Feb. 1, and also the takings by Southern spinners to the same date, so as to give substantially the amount of cotton now in sight.

	1883-84.	1882-83.	1881-82.	1880-81.
Receipts at the ports to Feb. 29.....	4,340,218	4,901,714	4,058,486	4,070,086
Interior stocks on Feb. 29 in excess of Sept. 1.....	178,109	291,932	297,647	283,620

	1883-84.	1882-83.	1881-82.	1880-81.
Total receipts from plantations.....	4,518,327	5,193,646	4,356,135	4,953,706
Net overland to Feb. 1.....	444,671	472,320	337,278	374,919
Southern consumption to Feb. 1.....	150,000	180,000	125,000	110,000

Total in sight Feb. 29, 5,112,998 5,825,966 4,818,413 5,438,625

"It will be seen by the above that the decrease in amount in sight Feb. 29, as compared with last year, is 712,968 bales, the increase as compared with 1881-82 is 294,585 bales, and the decrease from 1880-81 is 325,627 bales."

Colorado Rates.

The Chicago, Burlington & Quincy last week cut rates from Chicago and St. Louis to Denver and other Colorado points on lumber. St. Louis was made by the Western Trunk Lines Association, the rate on lumber being reduced to 32 cents per 100 lbs. from Chicago to Denver. The Atchison, Topeka & Santa Fe this week has joined the Burlington & Quincy in cutting Colorado rates heavily on first-class freight and also on the lower classes, and the prospects are that low rates will prevail for some time, the support of the Atchison road having materially strengthened the Burlington in its opposition to the Western Trunk Lines Association.

Petroleum.

The production of the Pennsylvania and New York oil fields for January is given by *Stowell's Petroleum Reporter* as follows, in barrels of 42 gallons:

	1884.	1883.	Inc. or Dec.	P. c.
Production.....	1,825,838	1,948,319	D.	122,481 6.3
Shipments.....	1,866,961	1,357,815	I.	509,146 24.2
Stock, Jan. 3.....	35,884,569	35,187,116	I.	697,453 1.9
Producing wells.....	20,756	17,000	I.	3,756 17.8

The production reported is the lightest since December, 1880, and is considerably below the average for last year. Of the total the Allegheny District in New York furnished 11.9 per cent.; the Bradford District in Pennsylvania 61.1

per cent.; the Warren District 15.0 per cent., and the Lower District 12.0 per cent.

The shipments were smaller than in any month since July last and were exceeded in eight months of last year.

The stock reported 1 all in the pipe lines. It was increased during the month by 188,877 barrels, which is the excess of production over shipments.

There were 229 new wells completed during the month, the average daily production being 13.7 barrels each. There were 21 dry holes, or failures to reach oil, reported. At the close of the month there were 270 new wells reported in process of drilling.

Shipments out of the oil regions were as follows:

	Barrels.	P. c. of total.
New York.....	638,017	37.8
Philadelphia.....	155,247	9.2
Baltimore.....	5,728	0.3
Cleveland.....	370,114	22.0
Pittsburgh.....	43,383	2.6
Local points.....	266,948	15.8
Refined at Creek refineries.....	207,524	12.3
Total.....	1,688,961	100.0

Shipments of oil refined at Creek refineries (reduced to its equivalent in crude) were: New York, 80,171; Philadelphia, 1,280; Baltimore, 16,412; Boston, 53,199; local points, 56,462; total, 207,524 barrels.

The Reporter says: "The position of affairs in the producing regions does not indicate that any marked change in the present tendency is to take place. That is to say, there is nothing to show that the decline in production will be checked. Large wells have been developed since the beginning of the year, but so far none of these have established the opening of a producing field that will prove dangerous to the producers' interests. The new wells in the Grandin and Balltown districts have shown the qualities of their predecessors in declining rapidly, as well as failure to respond to the subsequent and liberal use of the torpedo. If danger is to be apprehended from any direction it is from the present developments going on near the Sheffield, Warren County, regions, known as the Henry's Mills field."

"Here the opening of the McKinney, the Porter, the McCalmont and other wells exerted a temporary effect on value during January and February, and it remains for further prospecting to determine whether the field referred to contains an extended area of rich territory or not. The latter supposition is as yet borne out by the rapid decline of nearly all the new wells opened. The present yield of this new field is about 1,200 barrels daily, an amount which must soon be considerably increased, as a group of new wells will be due before the close of February. The chances are that if any decided increase in production comes it must come through increased activity in the old rather than development of new oil fields."

At the last meeting, held in Omaha, before proceeding with business the following resolution was unanimously adopted: "Resolved, That it is considered best by all the lines here represented that the Joint Western Classification Committee be continued, and that its action shall be considered binding on all matters pertaining to the classification of freight carried in the territory agreed upon. It was also resolved that the Classification Committee shall consist of a proper representative from the freight department of each of the following roads: Atchison, Topeka & Santa Fe; Burlington & Missouri River in Nebraska; Central Iowa; Central Pacific; Chicago & Alton; Chicago, Burlington & Quincy; Chicago, Milwaukee & St. Paul; Chicago, Rock Island & Pacific; Chicago & Northwestern; Chicago, St. Paul, Minneapolis & Omaha; Denver & Rio Grande; Illinois Central; Kansas City, Fort Scott & Gulf; Missouri Pacific; Northern Pacific; Sioux City & Pacific; St. Louis & San Francisco; Union Pacific; Wabash, St. Louis & Pacific."

Mr. W. S. Mellen was re-elected

causing said cattle to be loaded on a defective, unsound car, and in reloading and transporting said cattle, it appeared from the agreement that the shipper was to load and unload the stock at his own risk, defendant to furnish laborers to assist, to be under the plaintiff's control: *Held*, that evidence concerning the bedding of the car was improperly admitted, as there was no allegation in the petition warranting the admission of such testimony, and under the contract defendant was not liable for anything connected with the loading and unloading. Reversed.

Damages for Injuries in Getting off a Train.

In the case of Clotworthy against the Hannibal & St. Joseph Co., in the Missouri Supreme Court, which was an action against a railroad for the recovery of damages received in getting off the train at the place of her destination, in consequence of the starting of the train after it had stopped, and while she was getting off, without giving her sufficient time to get off, the lower court instructed the jury that if defendant's agents stopped the train at a station, and plaintiff started to get off, then it was negligence in defendant to start the train before she got clear off the cars upon the depot platform. Plaintiff recovered judgment. *Held*, said instruction is fatally defective. Reversed.

Right of a Court to Regulate Interchange of Business.

A dispatch from Washington, March 8, says: "The Supreme Court rendered a decision to-day in the case of the Atchison, Topeka & Santa Fe Railroad Co. against the Denver & New Orleans Railroad Co., an appeal from the Circuit Court of the United States for the District of Colorado. This was a suit brought to compel the Atchison, Topeka & Santa Fe Railroad Co. to unite with the Denver & New Orleans Railroad Company in forming a through line of railroad transportation to and from Denver, over the Denver & New Orleans road, with all the privileges as to exchange of business, division of rates, sale of tickets, checking of baggage, etc., that are or may be customary with connecting roads, or that are or may be granted to the Denver & Rio Grande Road. By the decree of the Court below a compulsory business connection was established between the two companies and rules were laid down for the government of their conduct toward each other in this new relation. In other words, the Court made an arrangement for the business intercourse of these railroads, such as in its opinion they ought in the law to have made for themselves. This Court holds that the constitutional right in Colorado to connect railroad with railroad does not of itself imply the right of connecting business with business; that the courts cannot compel one railroad to do business with another according to a scheme which they (the courts) may devise; that the question of the relation of these two roads, so far as through business, through tickets, interchange of cars, etc., is concerned, is legislative, rather than judicial, and that upon the existing facts, a court of chancery can afford no remedy. Decree reversed and the cause remanded, with directions to dismiss the bill without prejudice. Opinion by Chief Justice Waite."

OLD AND NEW ROADS.

Allegheny Central.—Preparations are being made to begin work on this road. It is to run from the mouth of Chartier's Creek through the cities of Allegheny and Pottsville to Negley's Run.

Baltimore & Ohio.—The Philadelphia *Ledger* of March 3 says: "We learn that the plans of the route of the new Schuylkill River East Side Railroad, the line of the Baltimore & Ohio Railroad into this city, are about completed, and will soon be submitted to Councils. The road uses the old railway of the Philadelphia, Wilmington & Baltimore Railroad northward from Chester to a point below Gray's Ferry, where the new line begins. This new route is by a double track railway, crossing the Schuylkill from southwest to northeast upon a drawbridge located about 100 ft. below the Gray's Ferry bridge. On the east side of the river it crosses the old Philadelphia, Wilmington & Baltimore line about Thirty-fifth street at grade, and also crosses at grade Gray's Ferry road alongside that line. The proposed tracks are then sunken, and go under the railway that crosses the Arsenal bridge and under South street, the grade finally coming down to the present level of the land on the east side of the Schuylkill, and at this level crossing to the eastward of the heads of the docks and passing under Chestnut and Market streets and the Filbert street extension of the Pennsylvania Railway. This level would permit Walnut street, if the Schuylkill is bridged there, to cross over the new railway. North of Filbert street the grade rises, and crosses Arch street and the streets to the northward by bridges, the grade not coming down to the surface again until the terminus at Twenty-first street and Pennsylvania avenue is reached, where the new line connects with the present tracks of the Reading Railroad. The only grade crossings of railroads on streets that at present cross the Schuylkill River, we are informed, are at Gray's Ferry road and the old Philadelphia, Wilmington & Baltimore tracks alongside it. The engineers who have laid out the line say that the level of Gray's Ferry bridge is so low that it would be difficult to sink the new tracks under it, and that they have located their new bridge in the present position because it gives the most direct line across the Schuylkill and also the most eligible rock foundations for the bridge piers. We understand that these locations are opposed by the Pennsylvania Railroad and various navigation interests on account of the grade crossings mentioned above, and also because the proposed bridge is regarded as too near the Gray's Ferry bridge. The controversy on the subject has begun in the courts and before the Port Wardens, and will no doubt open in Councils when the plans are presented there. The Reading Railroad interests actively support the proposed new line."

Boston, Concord & Montreal.—The directors of this company have resolved to cut down the wages of the employees from 8 to 10 per cent. Great dissatisfaction is expressed by the men, especially the engineers, of whom some threaten to leave the road. They also complain that in addition to this cut their work has been increased by lengthening their runs.

Buffalo, New York & Philadelphia.—The general office of this company was on March 1 transferred from Philadelphia to New York.

Canadian Pacific.—In Ottawa, Feb. 28, the bill granting the loan of \$22,500,000 to this company was read the third time and passed in the Lower House. The bill now goes to the Senate.

Cape Girardeau Southwestern.—This road is now completed to Puxico, Mo., 12 miles southwest beyond the late terminus at Sturdivant, and 45 miles from Cape Girardeau on the Mississippi River.

Carolina, Cumberland Gap & Chicago.—A report which has been circulated apparently by interested parties,

to the effect that the Louisville & Nashville road would furnish substantially to this working is contradicted, but the officers of the last named company say that there is no truth whatever in the report and that they have no interest in the projected road.

Central Massachusetts.—This company gives notice that the preferred stock will be ready for delivery at the office of the New England Trust Co. in Boston on and after March 3, in exchange for the receipts issued for the bonds deposited with the trust company. The company also requests preferred stockholders who are willing to take any of the bonds to send their names and the amount which they will take to the president. The bonds referred to are those to be issued by the new company for the completion of the road, and their amount is yet undecided, but it will probably be not less than \$1,000,000 and not more than \$1,500,000. It is said that the offers have been received from outside parties to take them, but it is desired to give the old bondholders the first chance to subscribe for them.

Central of New Jersey.—The taking of testimony in the Dinsmore suit has continued during the past week, but nothing has been developed that was not pretty well known before.

Central Pacific.—The Trinity (Cal.) *Journal* says of the extension of the Oregon Division from Redding, Cal., north, that it will be one of the most crooked roads in existence. For the 32 miles already completed there is hardly a quarter of a mile of straight track, the road following the windings of the Sacramento where possible, and boring through mountains where impossible. The road, when completed, will have one of the finest road-beds in the world, mostly rock and everlasting.

In San Francisco, Feb. 28, the Circuit Court decided the railroad tax cases in favor of this company except in four counties. Counsel for the company stated that it would waive judgment and would agree to pay the face of the taxes, the counties losing the penalty and interest which was sued for.

Chicago & Great Southern.—This road is now entirely completed from Fair Oaks, Ind., on the Louisville, New Albany & Chicago road southward to Yeddo, 80 miles. The gap between Pine Village and Attica, Ind., which has existed for some time is now filled up, and trains run through over the whole length of the road.

Chicago, St. Paul, Minneapolis & Omaha.—It is stated that this company has sold \$1,100,000 of its 6 per cent. consolidated bonds to H. B. Collins & Co., New York, at a rate which is not made public.

Cincinnati, Van Wert & Michigan.—The stockholders have voted to increase the capital stock of this company to \$4,000,000 to provide means for the construction of the road.

Cincinnati, Wheeling & New York.—This road is now completed to Morgan, O., 5 miles beyond the late terminus at Seneca, and 19 miles from the western terminus at Cumberland.

Cleveland, Columbus, Cincinnati & Indianapolis.—A mortgage for \$12,000,000, covering all the property of this company, has been filed in the counties in Ohio and Indiana through which the road runs. It is made to the United States Trust Co., of New York, as trustee, and is to secure an issue of bonds having 50 years to run at 6 per cent. interest. Of these bonds \$7,500,000 are reserved to retire prior bonds, and the balance are to be used for improvements, etc., as required.

The following statement for the eleven months ending Nov. 30 is published in London:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$4,004,702	\$4,065,939	D.	\$61,177 1.5
Expenses.....	2,791,376	2,728,965	I.	62,411 2.3
Net earnings.....	\$1,213,326	\$1,336,974	D.	\$123,648 9.2
Fixed charges.....	602,962	574,117	I.	28,845 5.0
Surplus.....	\$610,424	\$762,857	D.	\$152,433 20.0

Expenditures for additions to property in 1883 were \$352,314, leaving a balance of \$253,110. The working expenses were 69.7 per cent. of gross earnings in 1883, against 67.1 per cent. the previous year.

At the annual meeting in Cleveland, March 5, Thomas P. Fowler, of New York, attorney for James McHenry, was present and submitted a resolution in behalf of his client, which set forth that the net earnings were largely in excess of the operating expenses, fixed charges, and dividends paid; that large sums so earned, amounting in the aggregate to more than \$3,000,000, have from time to time been expended upon the property of the company and its leased lines, and in acquiring additional real estate and terminal facilities. On account of these facts the resolution asks that the directors be required to declare and pay in cash to stockholders of record such an amount in dividends as properly represents the net earnings for the last fiscal year, and that the directors be requested to declare that stockholders of record are entitled to such dividend or dividends as properly represent the aggregate amount of net earnings which has heretofore been applied to improvements and additions to the company's property, and for which the revenue account of said company may properly be reimbursed from capital or additional securities representing the cost of such addition and improvements. In conclusion, the directors are requested to take such steps as they may deem proper to provide for the payment to shareholders of the net earnings, heretofore applied to the purposes stated above. The resolution was adopted.

Cleveland, Youngstown & Pittsburgh.—On application of Carnegie Bros. & Co., of Pittsburgh, and other creditors, the Court of Common Pleas of Jefferson County, O., on March 3, appointed a receiver for this road. The Receiver has taken possession of the property and has been ordered to report to the Court as soon as possible the condition of the company. The road has been in operation for several years from Alliance, O., to Phalanx, 27 miles, and an extension from Alliance to Nebo, 70 miles, is about finished.

Concord.—This company has let the contract for building a new union passenger station in Concord, N. H., to Head & Dawst, of Manchester, N. H. The foundation has already been put in, and work on the rest of the building will be begun as soon as the weather permits. The main building will be 218 ft. long, 62 ft. wide and three stories high. The passenger room will be 65 by 60 ft., and in the centre of the building will be a rotunda 60 ft. high. There will be a telegraph office, ladies' parlor, smoking-room, restaurant and other necessary rooms for the accommodation of passengers. The second floor will contain the general offices of the company, and the third floor will contain smaller offices for clerks and others. The structure will be of brick, with granite trimmings, and will be surmounted by a roof of slate. The design is for an ornamental structure.

Colorado Coal & Iron Co.—A circular issued by this company says: "The annual report will approximately

show that during the past year 599,000 tons of coal have been mined, as against 850,894 tons in 1881 and 612,363 tons in 1882; 125,000 tons of coke have been produced, as against 47,640 tons in 1881 and 90,256 tons in 1882. At its works at South Pueblo and Denver, it has manufactured in 1883, 25,000 tons of pig iron, 16,000 tons of steel rails, 63,000 kegs of nails, 4,500 tons of merchant bar iron, besides joints, spikes, and other products. The iron mines have shipped a total of 39,000 tons of iron ore. The company has no floating debt. And although the principal of the ten-year bonds (\$1,500,000) of a predecessor company fell due at a difficult moment, before new bonds could be negotiated, that debt, with all other debts, has been paid. It is not denied that this imposed difficulties and sacrifices, but they were overcome, and:

In 1883 your company's gross earnings were.....	\$4,128,000
Its expenses.....	3,813,000
Net earnings.....	\$315,000
Add interest on investments.....	43,000
Total.....	\$358,000
Deduct fixed charges.....	218,000
Net income.....	\$139,000
Add royalties earned by the company.....	91,000
Total net results over and above fixed charges....	\$230,000

"The sales of real estate amounted to \$38,000. The materials and manufactured stock on hand amount to \$458,928.

"The company has in its treasury over \$400,000 of interest-paying securities, chiefly Denver & Rio Grande consols. The litigation involving our title to certain coal lands in Southern Colorado is now pending in the United States Supreme Court, where the final result is expected to be favorable.

"The only perceptible cloud on the horizon is the recent attempt on the part of the new administration of the Denver & Rio Grande Railway to violate the long-standing contracts and time-honored policy under which both companies have grown up from their birth. Long ago, when the Denver & Rio Grande was embarrassed, it received at different times financial aid from the companies whose consolidation has formed this company, which mortgaged their properties for the purpose, and accepted, as part of the consideration, long-time contracts, solemnly executed and since repeatedly ratified by the railway stockholders, whereby, among other things, the latter promised to give us as good rates over its lines as should ever during their life-time be given any other shipper; which contracts were wise in their inception, proved to be of mutual advantage, and enabled both companies to develop their resources, and have been deemed inviolable in the past. This company, conforming to them, has given all its freight to that company and ignored competing carriers, until it became the largest customer of the railway, furnishing it over 30 per cent. of its entire freight earnings. But on Jan. 7 last, in the midst of our increasing trade, an order was issued by the officers of the railway company, the effect of which was to give largely preferential rates to other shippers, and, temporarily, at least, destroy all our newly-established trade in Utah, Nevada and California. * * * When we learned of the solicitation of your proxies for a revolutionary board, we had no alternative, as your representatives, but to lay the facts before you. The issue is thus clearly made. Your board did not raise it or seek the controversy; it is thrust upon them. We sought and seek in this business only what is due to your company, to wit, rates never to exceed the best rates per mile given to any other company, association or individual."

Continental Freight.—The Chicago *Inter-Ocean* says: "Mr. Milton Weston, President of the Continental Freight Railway Co. has gone East to look after some matters personal to himself and others of interest to the corporation he represents. The capital stock of this new railway system is \$100,000,000. Of this amount Mr. Weston has personally succeeded in placing \$80,000,000 of the bonds with the leading capitalists of Amsterdam, London, Paris and Frankfurt. This insures the present financial success of the scheme. The line when completed is to run from Chicago to New York, and will be devoted exclusively to freight traffic, no passengers being carried at all. The schedule time is to be 17 miles per hour. There will be a double track, so as to allow trains to go both ways only five miles apart. The tariff charged will be one-third less than that paid the Eastern trunk lines, thus bringing about a strong competition. The entire line has been surveyed and work is soon to be commenced. An arrangement has already been made with the Lehigh Valley road, whereby the latter will become the Eastern connection of this company leading it into New York. There has already been paid \$1,000,000 for property in Hoboken, N. J., which will be used for terminal freight houses. The Lehigh Valley road has received \$30,000,000 in bonds for the privilege of carrying the company's business 180 miles into New York, the expectation being to build the line proper for \$80,000,000."

This item may be all correct, but at this end of the projected line there seem to be one or two little hitches about it. The Lehigh Valley people are not aware that \$20,000,000 in bonds repose in their strong-box; if the bonds are there they must have somehow been slipped in without their knowledge. No one can be found in Hoboken who has received \$1,000,000, or any part of that sum, in exchange for property which could be used for terminal purposes. It is a little strange also that our London and Amsterdam exchanges do not make any mention of the placing of \$80,000,000 in bonds, though one might suppose that a transaction of that size would receive at least a paragraph. On the whole, we do not expect to make mention of the building of many miles of the Continental Freight Railway this year—or next.

Denver & Rio Grande.—The tunnel near Bridgeport, Col., has been very nearly completed. It has been built by Ormond & Cooks as contractors, and has been in progress for about six months. Most of it is through solid rock; it is 16 by 21 ft., in section.

East Alabama.—It is said that work will soon be begun on the extension of this road from Buffalo, Ala., northwest to Gadsden, about 120 miles.

East Tennessee, Virginia & Georgia.—This company last week paid over to the State Treasurer of Georgia \$750,000 in state bonds, on account of the purchase of the Macon & Brunswick road, which was bought by this company from the state, some time ago.

Fargo, Larimore & Northern.—This company has been organized to build a railroad from Fargo, Dak., to Larimore, and thence northward to the Manitoba Line. The company is asking for right of way and local aid along the line.

Florida Central & Western.—The consolidation of this company with the Florida Transit & Peninsula has been noted elsewhere. A suit has been begun by Geo. L. Nichols, of New York, in the United States Circuit Court, to set aside the sale of the road and its consolidation, as having

been fraudulent as relates to the stockholders of the old Florida Central Co. This suit involves some rather complicated questions. A hearing was to be had on March 5.

Florida Railway & Navigation Co.—This company was organized at a meeting held in Jacksonville, Fla., March 1. It is formed by the consolidation of the Florida Transit & Peninsular, the Florida Central & Western, the Fernandina & Jacksonville, and the Leesburg & Indian River companies, and the consolidation has been ratified by the votes of all the companies concerned. The new corporation controls nearly all the railroad lines in Florida, with the exception of the line from Jacksonville to Tampa of the South Florida Railroad. The completed lines owned by the new company extend from Fernandina to Cedar Keys, 155 miles; from Waldo to Wildwood, 76 miles; from Hart's Road to Jacksonville, 23 miles; from Jacksonville to Chattahoochee, 208 miles; from Tallahassee to St. Marks, 21 miles; and from Monticello to Drifton, 4 miles; making a total of 486 miles. There is also a narrow-gauge line from Leesburg, on Lake Griffin, to Titusville, on Indian River, which is now under construction. The consolidated company will assume all the liabilities of the companies of which it is made up; the amount of stock to be issued is not stated.

Grand Trunk.—This company has an application before the Canadian Parliament for a bill to authorize the construction of a second track from Montreal to Toronto.

A cable dispatch from London, March 5, says: "The Grand Trunk Railway Co. announces that its accounts for the half year ended with December last show that the 70 per cent. net revenue accruing to the Grand Trunk will permit the payment in full of a dividend on the first and second preference shares and 3½ per cent. per annum for the half year on the third preference shares. The balance carried forward is about £5,000. The 30 per cent. of the revenue accruing to the Great Western share capital, covers the payment in full of dividends on preference and ordinary stocks, leaving a balance of £20,000 for the reduction of the deficit of the previous half year."

Illinois Midland.—An opinion has been filed with the clerk of the United States Circuit Court at Springfield, Ill., by Mr. Justice Harlan on the matters argued before him at Chicago and Boston in connection with the foreclosure suits against this company. The opinion sustains the validity of the four different mortgages on the road, and also that of the large amount in receiver's certificates. Last year the case was referred to a master to take testimony, and he reported that all of the certificates issued but \$100,000 were valid, and that a large amount of the other debts incurred by the receiver was also charges upon the property; also that the late receiver was entitled to a honorable discharge. Justice Harlan's opinion confirms this report. These questions having been disposed of, a final decree of sale will probably be entered at the June term of the Court.

Iron Mountain.—Surveys are in progress for a railroad from Iron Mountain on the McCloud River in Shasta County, Cal., to Pitt River Ferry on the Oregon Division of the Central Pacific road.

Kansas City Belt.—The contract for the grading of this road has been let to Mr. A. Danahy. It is to extend round Kansas City, Mo., making connection with the railroads entering the city. Some heavy grading will be necessary, including some long and very deep cuts.

Kansas City, Des Moines & Northern.—This company has been organized to build a railroad from Kansas City, Mo., northwest to Des Moines, Ia., over a country pretty well supplied with railroads.

Lackawanna, Pittsburgh & Northern.—This company has been recently organized to build a branch of the Lackawanna & Pittsburgh road from Perkinsville, N. Y., to Geneva, in Ontario Co., a distance of about 40 miles. The new company will issue bonds to the amount of \$1,500,000. It is controlled by the Lackawanna & Pittsburgh Company.

Lake Shore & Michigan Southern.—This company's statement for the quarter ending Dec. 31 is as follows:

Earnings	\$4,754,246
Expenses	2,537,241
Net earnings	\$2,217,005
Income from other sources	39,635
Total	\$2,256,640
Interest and guaranteed dividends	\$796,368
Rentals and taxes	250,528
	1,046,896
Net balance	\$1,209,744

From this balance a dividend of 2 per cent. was paid, which required \$989,330, leaving a surplus of \$220,414. The funded debt on Dec. 31 was \$44,466,000, which is a decrease of \$250,000 since the last report.

Lehigh Coal & Navigation Co.—It is stated that this company has made arrangements to carry its \$800,000 of floating debt at 4 per cent. for one year with the option of prolonging the period for five years. If this statement is true it is not probable that the stock in the treasury will be sold at present. It is also understood that the company has arranged with the largest holders of Nesquehoning Valley stock, on which the 7 per cent. guarantee under the lease expires next September to reduce the dividend to 5 per cent. after that date, giving them the option to sell the stock at par to the Lehigh Coal & Navigation Co. This arrangement will reduce the fixed charges about \$26,000 yearly.

Louisville, Evansville & St. Louis.—It is stated that at a meeting held in Boston recently the directors resolved to raise \$500,000 for the purpose of procuring necessary equipment and paying off the floating debt. A committee was appointed to secure subscriptions from the bondholders.

Louisville & Nashville.—In the suit recently begun in the United States Circuit Court at Nashville to restrain the Tennessee Railroad Commission from interfering with the business of this company the Court last week, after hearing argument, granted an injunction. The Court held that the act of the Legislature is in conflict with the State Constitution and the Constitution of the United States.

Mexican Central.—A dispatch dated March 3 from General Manager Robinson stated that on that date there remained a gap of only 9 miles in the main line, and that the connection between the two ends of the road would probably be made this week.

The *Mexican Financier* of Feb. 16 says: "Mr. Robinson is now arranging the schedule for running the express trains between here (City of Mexico) and Paso Del Norte. While the details have not yet been fixed it is probable that the trip will be made in 52 hours, making a running time of about 40 kilometers, or 25 miles, an hour, including stops, the trains leaving here in the morning and arriving at El Paso on the second morning, making a close connection with the Atchison, Topeka &

Santa Fe trains, and leaving El Paso in the evening and reaching here the second evening. By this arrangement the most interesting part of the line will be traversed by daylight. The trains on the Atchison, Topeka & Santa Fe now arrive at El Paso in the morning and leave in the evening, but a change will be made, probably connecting with the Atlantic & Pacific California and Eastern express at Albuquerque. The service of the Central is now being organized for through business. Gen. Joseph Brown, of Denver, Col., formerly agent there of the Atchison, Topeka & Santa Fe, has been appointed Ticket-Agent of the Mexican Central for this city, and will soon establish an office on the principal business street, with telegraph and express offices included.

Two kilometres of track have been laid on the Pacific Division of the Mexican Central at San Blas. On the Tampico Division, at last accounts, the tunnel near the city of Valles lacked 23 metres of completion. The total length of the tunnel will be 59 metres.

Mexican Railroad Notes.—The following notes are from the *Mexican Financier* of Feb. 9:

Work on the railway from Toluca to San Juan de las Huertas began on Jan. 30.

The Mexican Central track has reached Fresnillo, and the work of construction on this part of the line will be at end within a few days.

The Puebla & Izúcar de Matamoros Railway has been completed as far as Atlilco, and was inaugurated Feb. 5 to that point, where the event was celebrated amid great rejoicings. The railway passes through Cholula, the site of the famous pyramid, and Atlilco is almost on the foot of Mount Popocatepetl, on the opposite side from Cuautla. It is said to be a beautifully situated place, and its accessibility ought to make now a pleasant resort for tourists.

A correspondent connected with the Mexican Central at Tampico writes concerning the company's line under construction from that port to San Luis Potosi and Aguascalientes: "We are running slow now until the main line is completed, when we hope to go ahead with full force. We have two firms of contractors engaged upon our heaviest work, and as the intermediate sections are comparatively light the present slack will not delay the final completion of this line so much as might be supposed."

The conductors and brakemen on the first division of the Mexican Central appeared in handsome dark blue uniforms on the first of this month, those of the former having cut-away coats with brass buttons, and the latter, sack coats with nickel buttons. The brakemen appear very proud of their improved appearance, and their authority is better respected by the public. The company provides the first suit, and after that the men are expected to keep themselves in good appearance at their own expense. The conductors and brakemen on the other divisions of the line will soon appear in like style.

Minneapolis, Sault Ste. Marie & Atlantic.—A contract, it is stated, has been signed between this company and the Northern Pacific, by which the new company will have the use of the terminal grounds and stations of the Northern Pacific in Minneapolis. The contract was agreed upon last fall, but some details remained to be arranged. It is for 40 years, and the rental to be paid is to be equal to one-half the interest in the cost of the improvements to be made on the property, etc. Officers of the company state that they have made arrangements to build 100 miles of road during the coming season. Work will be begun at a point on the Chicago, St. Paul, Minneapolis & Omaha road, near Turtle Lake, Wis., and will be continued from that point in a northeasterly direction to a connection with the Wisconsin Central. Arrangements have been made for the use of the Omaha tracks from Turtle Lake to St. Paul and Minneapolis for the present.

Monson.—This road, which was built last year, extends from Monson Junction, Me., on the Bangor & Piscataquis road to Monson, Me. 3 miles, and has been in operation since October last. The road is equipped with two locomotives, one passenger and 16 freight cars. It has considerable traffic from the large granite quarries at Monson.

Morgan's Louisiana & Texas.—The contract has been let to Messrs. Rogers & Balentine to build a branch of this road from Baldwin, La., along Bayou Teche about 18 miles. The work on this branch will be light and it will reach a number of rich sugar plantations.

New Brighton & New Castle.—The Supreme Court of Pennsylvania has delivered an opinion reversing the decree of the Court of Common Pleas and giving this company the right of way at Rock Point, where its completion was disputed by the Pittsburgh, Youngstown & Chicago road. The road, which is controlled by the Pennsylvania company, was very nearly finished, but its completion has been delayed by the dispute over the right of way at this point, where a new location would have compelled the company to do some very heavy and expensive work. The road is intended as a cut-off or low-grade line for freight going from Pittsburgh west over the Fort Wayne road.

New Castle Northern.—This company, although it has as yet no railroad completed, has two boards of directors, and a lively war is in progress between them in the courts. One board headed by Gen. Negley, of Pittsburgh, has prepared to issue bonds, but their value was somewhat impaired by a notice from the other board that the said bonds were invalid and issued without any legal authority; and this board has also made a contract for the construction of the road, and the contractor in his turn is enjoined by the other board. From present appearances all the money which both boards can raise will be expended for some time to come in paying lawyers in court fees. There seems to be little probability in the construction of this road.

New Haven & Derby.—Many citizens of New Haven object to the efforts made to authorize the issue of \$150,000 in preferred stock of this company on the ground that the city will lose control of the road. The city of New Haven now owns \$200,000 of stock, and has guaranteed \$225,000 of the bonds, and in addition has loaned the company \$70,000 in money. An organized effort will be made on behalf of the city to defeat the bill when it comes up in the Legislature.

New York, Lake Erie & Western.—This company has issued an order abolishing the difference between rates to competitive and local points on the Eastern and Delaware divisions which had been in existence for a number of years. Under the new arrangement all local stations on the Eastern and Delaware divisions will have New York rates.

New York & New England.—In the United States Court at Hartford, Conn., March 4, this company through its attorney filed a supplemental answer to the supplemental bill of complaint in the Brasseur suit. In the answer the company makes the following admissions: That after the filing of the bill it defaulted in the payment of the coupons on the first and second mortgage bonds; that the complainant held five second-mortgage bonds and was refused payment on the same, and that a majority of the

coupons outstanding were presented, and that payment was refused; that the complainant requested the trustee to institute foreclosure proceedings under the second mortgage and that refusal to pay the coupons was a breach of the conditions of the mortgage.

New York, West Shore & Buffalo.—The Attorney-General of New York has denied the application made by Warren Currier and his representatives to bring an action to remove the officers and directors of the company and to declare the construction contract void. He says that the property and business affairs of that corporation should not be interfered with unless it is clear that some public wrong or injustice has been done and it does not appear that the claimants have made it clear that no public interest will be promoted or protected by the granting the application, and there is reason to believe that it might result in the contrary, while any individual wrong which they may have suffered can be redressed in other ways.

In Albany, March 3, the Attorney-General of New York granted the application of Chas. J. Ryan and others that a motion be made in the Supreme Court to remove Ashbel Green as Receiver of the North River Construction Co., or to appoint an associate receiver with him and for their relief. The Attorney-General granted the petition mainly on the ground that the provisions of the act in relation to the appointment of a receiver for corporations have not been complied with in the proceedings heretofore had.

It is said that a new interest, represented by Mr. W. H. Osborne (formerly of the Illinois Central) has secured a large holding of the bonds and stock. It is said that this interest has taken hold of the road as an investment, and that the financial plan submitted last week was suggested by Mr. Osborne.

Norfolk & Western.—The contractors for the construction of the Cripple Creek Branch, Messrs. Hills & Fairfax, have now about 700 men employed, and are increasing their force gradually. The line will be about 96 miles long, and there is some heavy work upon it.

Arrangements have been completed to extend the Virginia & Tennessee bonds, which mature July 1 next for 30 years from that date at 5 per cent. The amount of these bonds is \$990,000, and their extension will obviate the necessity of issuing an equal amount of the general mortgage 6 per cent. bonds to provide for their payments.

Norwood & Montreal.—This company has been organized to build a railroad from Norwood, N. Y., to the Canada line at Fort Covington. The line will be 40 miles long and will be operated as a branch of the Rome, Watertown & Ogdensburg road, and the organization is controlled by that company.

Northern Illinois.—This company has been organized to build a railroad from Belvidere, in Boone County, Ill., southward to a point in Hall Township, Bureau County, with a branch to La Salle. This road is intended to open up the coal fields of Bureau and Hall townships.

Ohio Central.—A committee consisting of Messrs. Geo. F. Stone, H. M. Lyman and E. H. R. Lyman are now engaged in preparing a plan for the reorganization of this company, which will be submitted to the scrutiny of holders for ratification as soon as it is completed.

Ohio & Mississippi.—The directors of this company have issued the following circular in regard to the new consolidated bonds:

"At the meeting of the directors of the Ohio & Mississippi Railway Co., held in this city to-day, resolutions were passed by a very decided majority authorizing the Executive and Finance committees to dispose of the new 5 per cent. mortgage bonds of the company to the extent necessary to pay off all arrears of indebtedness, so as to release the railway and other property from the custody of the courts and put the company again in control. Strong confidence was expressed by the committee of their ability to place the bonds with very little delay, and provision was made for an early application to the Court for the proper order to restore the railway to the company and for the settlement of the Receiver's accounts. It is believed this valuable property will soon be again operated free from the restrictions which necessarily trammel the Receiver and enable its managers to place it in a strong and independent attitude, so as to command the traffic to which the line is fairly entitled."

About \$3,000,000 of these bonds will have to be sold for the necessary payments, including the receivership, and under the resolution of the board they must be sold at no less than 80. It is said that the Baltimore & Ohio Co. has offered to take a large part of the bonds at that figure.

The Receiver's statement to the Court for January is as follows:

Cash, Jan. 1	\$241,222
Receipts from all sources	459,577
Total	\$700,799
Pay-rolls, vouchers, etc.	\$427,458
Coupons on bonds	225,000
	652,458

Cash on hand, Feb. 1 \$48,341

The payments exceeded the receipts by \$192,881 for the month.

Oregon & Transcontinental Co.—The books and papers of this company have been removed from New York to Boston, where the general offices will be located hereafter.

Parsons & Southern.—This company has been organized to build a railroad from Parsons, Kan., to Altamont, thence southwest to the Indian Territory line in Montgomery County, and thence southward to a junction with the Atlantic & Pacific road in the Indian Territory. The length of the line is about 120 miles.

Philadelphia & Reading.—This company's statement for January and the two months of the fiscal year from Dec. 1 to Jan. 31 shows for its railroad lines the following results, the New Jersey Central being included this year, but not last year:

	1884.	1883.
January:		
Earnings	\$1,495,749	\$2,195,806
Expenses	918,773	933,433
Net earnings	\$580,976	\$759,133
Two months:		
Earnings	\$3,061,551	\$4,493,443
Expenses	1,865,313	2,848,753
Net earnings	\$1,196,238	\$1,644,690

This shows for the Reading lines proper for the two months a decrease of \$342,596, or 10.1 per cent., in gross earnings; a decrease of \$24,883, or 1.3 per cent. in expenses, and a decrease of \$317,713, or 20.9 per cent., in net earnings.

The New Jersey Central rental for January was \$470,282, and for the two months \$954,323, showing a deficit on that line of \$292,075 for the month, and of \$505,871 for the two months, which are those of lightest traffic on this road.

The statement for the Philadelphia & Reading Coal & Iron Co. is as follows:

	January.	Two months.	1884.	1883.
Earnings.....	\$979,019	\$951,219	\$2,089,475	\$2,011,048
Expenses.....	1,070,686	961,684	2,287,252	2,026,339
Deficit.....	\$91,667	\$10,465	\$197,777	\$5,291

This shows for the two months an increase of \$68,427, or 3.4 per cent, in gross earnings; an increase of \$260,913, or 12.8 per cent, in expenses, and an increase of \$192,486 in the deficit.

For both companies together the statement is as follows, including the Central lines this year:

	January.	Two months.	1884.	1883.
Earnings.....	\$3,174,819	\$2,559,994	\$6,582,918	\$5,425,195
Expenses.....	2,507,353	1,895,117	5,136,005	3,916,535
Net earnings..	\$667,466	\$664,877	\$1,446,913	\$1,508,660

The general result for the two months was thus an increase of \$1,157,723, or 21.3 per cent, in gross earnings, with an increase of \$1,219,470, or 31.1 per cent, in expenses, and a decrease in net earnings of \$61,747, or 4.1 per cent. The expenses above do not include anything for interest or rentals. If the deficit on the Central lease be deducted from the net earnings for the two months it leaves a balance of \$941,042, which is less by \$567,618, or 37.6 per cent., than the net earnings of last year.

The traffic for the year was as follows:

	January.	Two months.	1884.	1883.
Passengers.....	1,800,498	948,282	3,649,849	1,906,985
Tons merchandise.....	623,806	529,833	1,283,480	1,054,362
Tons coal.....	731,714	576,211	1,551,974	1,282,776
Tons coal on colliers.....	37,248	36,745	83,879	81,906
Coal mined:				
By Reading C. & I. Co.....	209,333	257,934	556,052	569,993
By tenants.....	53,750	107,760	142,408	228,184
Total.....	323,083	365,694	698,460	828,177

The increase in traffic this year was entirely from the addition of the Central lines. The Central traffic for January, 1884 (included above), was 812,362 passengers, 151,863 tons merchandise and 291,313 tons coal; for the two months it was 1,594,580 passengers, 298,543 tons merchandise and 619,190 tons coal.

Pittsburgh & Western.—Argument was heard in Pittsburgh last week on the report of the master who found that Messrs. Callery and others, the principal stockholders in this company, are liable to the amount of \$240,000 to the stockholders of the old Pittsburgh, New Castle & Lake Erie road, they having procured a fraudulent sale of that road. Exceptions were filed to the report on the ground that the master had erred in finding that the sale was fraudulent. The Court reserved its decision.

The reported sale of the controlling interest in the stock of the Baltimore & Ohio company has been confirmed, and the majority of the directors are now Baltimore & Ohio men. No present change in the immediate management of the road will be made.

Quincy, Jacksonville & Eastern.—This company has been organized to build a railroad from Quincy, Ill., to Jacksonville, about 65 miles. The line will be very nearly parallel with that of the Wabash.

Reading & Pottsville.—This company has been organized to build a railroad from Reading, Pa., to Pottsville, 35 miles. It is understood that the road is to be an extension of the Pennsylvania Schuylkill Valley Railroad.

Richmond & Danville.—This company has applied to the Virginia Legislature for a bill which shall authorize the Richmond & Danville and the Virginia Midland companies to contract with each other in such manner and on such terms as they shall deem best to acquire the united management and control of their lines, and asking that authority may be given to the companies to carry out such agreements as the stockholders of said companies shall approve. The bill is now in committee, and arguments were heard by the committee in Richmond Feb. 28. It was opposed by some stockholders of the Midland on the ground that their interests would suffer in the consolidation. The committee having also heard the officers of the two companies in favor of the bill agreed to report to it with the addition of a clause providing that nothing in the bill should be construed to authorize the Richmond & Danville Co. to sell, lease or otherwise dispose of its road and franchises.

St. Lawrence & Ottawa.—The Canadian Pacific Company has made a contract with the bondholders to lease this road, which extends from Ottawa, Can., to Prescott on the St. Lawrence River. The terms are the payment of 4 per cent on the bonds, such payment to begin from the date when the company made default in paying the interest. To make the agreement legal, however, the bondholders must secure a controlling interest in the stock in order to prove the lease.

St. Louis Bridge.—The following statement of the operations for 1883 is published in London, as reported by the Missouri Pacific and the Wabash, St. Louis & Pacific companies, lessees:

Gross earnings.....	\$1,413,617
Expenses (38.8 per cent.).....	549,107
Net earnings.....	\$864,510
Pool receipts.....	28,269
Net income.....	\$892,779
Interest, rentals and dividends.....	771,717

Surplus for the year.....\$121,062

Under the lease, interest at 7 per cent. was to be paid on the first mortgage of \$5,000,000, 5 per cent. dividends on the first preferred stock of \$2,490,000, and 6 per cent. on the tunnel stock of \$1,250,000. The 5 per cent. on the first preferred stock is to continue until July, 1885, after which time 6 per cent. is to be paid. After July 1, 1884, an annual dividend of 3 per cent. is to be paid upon the second preferred stock, of which there is \$3,000,000. During the past year \$62,241 has been expended for construction and equipment, and \$7,995 for corporate expenses of the lessors.

Shenandoah Valley.—This company's statement for January is as follows:

Earnings.....	\$56,138	\$41,300	I. \$14,778	P. 35.7
Expenses.....	50,928	57,066	D. 7,338	12.8
Net, or deficit.....	Net \$5,210	Def. \$16,006		
Per cent. of exps.....	89.2	138.1	D. 48.9	

This shows a net gain of \$23,116 over last year in January.

Southern Pacific.—This company has been having the unusual experience of a great freshet on its road in Southern California. More rain fell in that section during the latter part of February than had ever been known before and heavy wash-outs occurred on the section of the road between Tehachapi and Los Angeles. Several of the tunnels in the Tehachapi Pass and at San Fernando were stopped by caving at the ends of and the road was obstructed for over a

week. Wash-outs occurred on several places on the road where it crosses ravines through which water had never been known to flow before. The damage is now entirely repaired and trains are running regularly as usual.

South Pennsylvania.—Collins Bros., who have the contract for 12 miles of difficult grading between the Allegheny and Laurel Hill tunnels, are making arrangements to begin work and will have a steady force upon the ground as soon as the weather will permit. Their contract includes the Quemaoning Tunnel. At the Tuscarora Tunnel in Path Valley, Mason & King, the contractors, have begun work. This tunnel will be over a mile in length and is the third in size of the eight tunnels on the line of the road. At the Ray's Hill Tunnel a considerable force is already at work, and the work is carried on night and day by three gangs of 50 men each, working eight hour shifts. A large force is also at work on the cuts and fills at the approaches to the tunnel. Contractors expect to use the electric light as soon as the arrangements are completed. The contract for the Laurel Hill Tunnel, the only one which had not been let, has been awarded to Putnam & Kuhns, who will begin work as soon as they can bring their plant to the point. Most of the line of this railroad is some distance from any existing road, which imposes considerable extra expense upon the contractors, as all tools and supplies have to be carted to the line.

Sylvania & Rocky Ford.—The organization of this company was completed at a meeting held last week at Sylvania, Ga. The road is to run from that place to Rocky Ford, on the Central road, a distance of about 13 miles. An assessment of 10 per cent. on the stock subscriptions has been ordered to pay for the preliminary work, and arrangements will soon be made to begin work.

Tennessee Railroad Commission.—In Nashville, Tenn., March 3, bills were filed in the United States Circuit Court by the Knoxville & Ohio and the Memphis & Charleston companies, both controlled by the East Tennessee, Virginia & Georgia, asking that the Commission be restrained from revising the tariff rates of these roads, bringing suit against them, or in any other way interfering with their management. Notice was served on the Commissioners, but the time for the hearing of the cases has not yet been set.

Toledo, Cincinnati & St. Louis.—In relation to the car trusts of this company, Judges Baxter and Drummond, of the United States Circuit Court have agreed to appoint a master to hear and determine questions which may arise and which have already arisen. The car trusts amount to about \$2,000,000, and some \$400,000 is overdue upon them. The opinion of the judges is said to be that a fair rental for the equipment from the time the road went into the custody of the Receiver should be among the first charges to be provided for on any foreclosure sale, and the apportionment of the obligations among the divisions is one of the questions before the master. The equipment has been kept in good repair, and the principal of the trust is supposed to be amply secured by it.

Toledo & Indianapolis.—In Toledo, O., Feb. 25, on application of the Union Trust Co. of New York a new appointment of a receiver for this road was made. The reappointment was formal entirely, and made on the commencement of a new suit for the foreclosure of the mortgage. Mr. David Robison, Jr., who was appointed some months ago on application of the floating debt creditors, was continued as Receiver.

Union Pacific.—At the annual meeting in Boston, March 5, the stockholders voted to adopt an amendment to the by-laws providing that the annual meeting shall be hereafter held in Boston, on the last Wednesday in March of each year.

Western Transit Co.—This company recently organized, has purchased the steamers, dock property, and other effects of the Western Transportation Co. The last named company owned 12 steam vessels which have been operated as a line between Buffalo and the upper lake ports. The new company is controlled by the New York Central & Hudson River and the line will hereafter be operated in the interest of that road. In addition to the 12 vessels purchased the new company has contracted with the Detroit Dry Dock Co. for the construction of two large propellers to be finished next September. Each of these new vessels will cost about \$200,000 and have a carrying capacity of 2,500 tons, making them among the largest vessels on the lakes. The line has been for many years run in connection with the Central Railroad although entirely distinct in ownership and management, but the change places it directly under the management of that company.

West Jersey.—This company's statement for January, the first month of the fiscal year, is as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Earnings.....	\$69,300	\$61,820	I. \$7,480	12.1
Expenses.....	44,400	40,246	I. 4,154	10.4
Net earnings.....	\$24,900	\$21,574	I. \$3,326	15.4
Per cent. of exps.....	64.1	65.1	D. 1.0	

The earnings of the West Jersey & Atlantic road (included in the statement above) were \$5,660, and the expenses \$5,901, showing a deficit of \$241 for the month.

Williamstown & Delaware River.—This is now the name of the road formerly known as the Williamstown Railroad, which was sold at foreclosure last year. It is now controlled by the Philadelphia & Reading Co., and extends from Atco, N. J., through Williamstown to Glassboro, 16 miles.

Winona, Alma & Northern.—Reynolds & Co., who have the contract for the grading of this road from East Dubuque, Ill., to La Crosse, Wis., are making preparations to begin work as soon as the weather will permit and have already a large number of laborers and teams assembled at East Dubuque.

Wyoming Southern.—This company has been organized to build a railroad from Cheyenne, Wyo., to Denver. It is intended as an extension of the projected Cheyenne, Black Hills & Montana road.

ANNUAL REPORTS.

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Union Pacific.

The report of this company for the year ending Dec. 31 last reaches us too late for extended summary or comment this week. As in previous years it gives the operations of the 1,820.9 miles owned, making no statements for the roads controlled and operated. The statements of earnings and income account for the year are given herewith.

The earnings were as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$21,002,542	\$22,821,884	D. \$1,819,342	8.9
Expenses.....	10,354,541	10,727,049	D. 372,508	3.6
Net earnings.....	\$10,648,001	\$12,094,835	D. \$1,446,834	12.0
Gross earn. per mile.....	11.534	12.534	D. 1.000	8.6
Net earn. per mile.....	5.848	6.643	D. .795	12.0
Per cent. of exps.....	49.3	47.0	I. .2	2.3

The mileage on which these earnings are reported was the same, 1,820.9 miles, in both years. No statement is given of the earnings or expenses of the 2,960 miles of branch roads which the company controls and operates. Of these controlled lines 396 miles were built during the year.

The disposition of net earnings was as follows:

Net earnings, as above.....	\$10,648,001
Interest and dividends received.....	2,066,682
Total.....	\$12,714,683
Interest on bonds.....	\$4,697,711
Sinking funds.....	\$70,489
Discount, interest, etc.....	177,863
Due U. S. on business of the year.....	1,800,958
Dividends, 7 per cent.....	4,200,788
Surplus for the year.....	\$1,261,874

During the year \$547,000 bonds were canceled or bought for the sinking funds. The bonded debt now amounts to \$90,601,583, of which the trustees of the consolidated mortgage hold \$6,095,250, leaving \$84,506,333 outstanding. The company holds \$30,845,492 stocks and \$24,444,230 bonds of controlled lines.

Texas & Pacific.

This company owns lines from Texarkana, Tex., to Sierra Blanca, 777 miles; from Texarkana Junction by Sherman to Fort Worth, 239 miles; from Shreveport to Marshall, 40 miles, and (through ownership of all the stock of the New Orleans Pacific Co.) from Shreveport, La., to New Orleans, 328 miles, and from junction to West Baton Rouge, 8 miles. Its trains use the Southern Pacific track from Sierra Blanca to El Paso, 92 miles, making a total of 1,484 miles worked. The following statements for the year 1883 were presented at the annual meeting in New York this week:

The general account is as follows:

Capital stock.....	\$32,161,900
Funded debt.....	44,016,791
Sundry accounts.....	34,231
Accrued interest not due.....	651,225
Total.....	\$76,864,147
Construction and equipment.....	\$60,469,865
Interest account, income and land grant scrip, 1879 to 1883.....	4,110,411
Terminal property at New Orleans.....	1,950,000
Cash and accounts receivable.....	827,381
Investments in stocks and bonds.....	7,546,250
Sinking fund first mortgage E. D. bonds.....	9,300
Advances to agents.....	24,908
Income account.....	2,040,137
Total.....	76,864,147

The funded debt was increased \$2,301,000 during the year. The stock was increased \$16,700.

The earnings for the year were as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$7,045,652	\$5,919,732	I. \$1,125,920	19.0
Expenses.....	5,397,645	4,576,440	I. 821,205	18.0
Net earnings.....	\$1,648,007	\$1,343,292	I. \$304,715	22.7
Gross earn. per mile.....	4.754	4.554	I. .200	4.4
Net earn. per mile.....	1.111	1.033	I. .078	7.5
Per cent. of exps.....	77.01	77.30	D. .29	

The income account was as follows:

Net earnings, as above.....	\$1,648,007
Income from other sources.....	392,701
Total.....	\$2,040,708
Fixed charges.....	2,214,402
Deficit for the year.....	\$173,694

The receipts from the Land Department (not included above) were \$634,595, the land sales and collections having been the largest ever made by the company. The total sales were 1,82,893 acres: there are 4,400,000 acres unsold.

The completion of the Atchafalaya bridge in December last has already resulted in a reduction in the operating expenses, and, it is stated, will add materially to the gross and net earnings during the current year. The company also expects to derive a large traffic from the New Orleans Cotton Exposition, to be held this year.

Camden & Atlantic.

This company owns a line from Camden, N. J., to Atlantic City, 59.79 miles, with a branch from Atlantic City to South Atlantic, 5.71 miles. It operates the Philadelphia, Marlton & Medford, a branch from Haddonfield to Medford, 11.70 miles, making 77.20 miles worked.

The company also operates a ferry between Camden and Philadelphia, across the Delaware, and runs a line of horse cars in Atlantic City. The following statements are from the reports for the year ending Dec. 31, as presented at the annual meeting last week.

The company has \$377,400 common stock, \$880,650 preferred stock, and a funded debt of \$490,000 first mortgage 7 per cent. bonds, \$497,000 second mortgage 6 per cent. bonds, \$225,000 consolidated 6 per cent. bonds and \$107,000 real estate bonds and mortgages.

The road last year carried 848,443 passengers and 157,059 tons of freight. Of these 60,818 passengers and 5,007 tons of freight were on the South Atlantic Branch. The passenger business between Philadelphia and Atlantic City is now pooled with the West Jersey road, both companies being controlled by the Pennsylvania Railroad Co.

The earnings for the year were as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Passengers.....	\$367,930	\$381,232	D. \$13,302	3.5
Freight.....	144,905	107,688	I. 37,217	34.6
Mail, etc.....	45,946	61,486	D. 15,540	23.3
Total.....	\$558,781	\$550,406	I. \$8,375	1.5
Expenses.....	392,067	300,084	I. 91,983	8.9
Net earnings.....	\$166,714	\$150,322	D. \$16,392	10.4
Gross earn. per mile.....	7.239	7.130	I. .109	1.5
Net.....	2.161	2.465	D. .304	12.4
Per cent. of exps.....	70.15	65.43	I. 4.73	

The earnings of the ferries are included above; also those

of the horse cars at Atlantic City. Expenses were increased by renewals and improvements of road made during the year.

The income account was as follows:

Net earnings as above.....	\$106,803.94
Interest, etc., received.....	8,078.38
Total.....	\$114,882.32
Interest, rents, improvements, etc.,	\$89,401.43
Dividend on preferred stock, 7 per cent.....	61,432.00
Balance.....	\$150,833.43

The condition of the road has been greatly improved during the year. 120 tons of steel rail having been laid and about 20,000 cross-ties put in, this being an increase of 14,000 over the previous year. The stations along the line of the road have nearly all been painted and the platforms renewed where necessary. Important improvements in the terminal facilities at Atlantic City have been made.

Housatonic.

This company owns a line from Bridgeport, Conn., to the Massachusetts line, 74 miles, with a branch from Brookfield Junction to Danbury, 5.5 miles. It leases the Berkshire road, from the state line to West Stockbridge, Mass., 22 miles; the West Stockbridge road, from West Stockbridge to the New York line, 2.75 miles; and the Stockbridge & Pittsfield road, from Vandusenville to Pittsfield, Mass., 22 miles. The total is 79.5 miles owned, 48.75 miles leased and 126.25 miles worked. The report is for the year ending Sept. 30.

The equipment consists of 23 locomotives; 29 passenger and 8 baggage cars; 533 box, 14 hay, 329 flat and 2 caboose cars; 1 wrecking car.

The general account is as follows:

Old stock.....	\$820,000.00
Preferred stock.....	1,180,000.00
Funded debt.....	1,110,000.00
Accounts and balances.....	286,777.51
Profit and loss.....	237,391.03
Total.....	\$3,640,168.54
Road and property.....	\$3,072,285.49
Rolling stock cars.....	215,703.47
Materials.....	89,629.61
Accounts and balances.....	121,367.52
Cash.....	161,092.45

The funded debt was increased during the year by the issue of \$66,000 new bonds due in 1912. The stock remained unchanged during the year.

The traffic for the year was as follows:

Train-miles:	1882-83.	1881-82.	Inc. or Dec.	P. c.
Passenger.....	296,947	292,188	I.	4.759
Freight.....	286,953	292,676	D.	5.723
Other.....	29,404	24,606	I.	4.858
Total.....	543,304	539,470	I.	3.894
Passengers carried.....	355,577	340,478	I.	15,099
Passenger-miles.....	794,731	8,546,740	I.	247,991
Tons freight carried.....	323,903	353,909	D.	30,304
Ton-miles.....	15,795,565	17,510,670	D.	1,715,105
Av. train load:				
Passengers, No.....	38	38		
Freight, tons.....	55	60	D.	5.83

There was an increase in passenger traffic and a decrease in freight, which were greater in proportion than the changes in train mileage.

The earnings for the year were as follows:

Freight and milk.....	1882-83.	1881-82.	Inc. or Dec.	P. c.
Passengers.....	\$470,583	\$487,292	D.	\$16,709
Freight.....	238,321	236,283	I.	6,039
Mail, etc.....	28,589	28,753	D.	164
Total.....	\$735,493	\$746,328	D.	\$10,835
Expenses.....	\$483,241	\$493,125	D.	\$9,884
Net earnings.....	\$252,252	\$253,203	D.	\$951
Gross earn. per mile.....	5.826	5.912	D.	86
Net.....	1.998	2.006	D.	8
Per cent. of exps.....	65.70	66.07	D.	0.37

Expenses include the extra renewals and improvements of road and equipment which are noted below.

The income account was as follows:

Net earnings, as above.....	\$252,251.80
State and other taxes.....	\$14,594.44
Rentals.....	74,107.39
Interest.....	55,199.76
Dividends on preferred stock, 8 per cent.....	94,400.00
Surplus for the year.....	\$238,301.59

Surplus, Sept. 30, 1882.....\$13,950.30
Surplus, Sept. 30, 1883.....\$23,440.73

Surplus, Sept. 30, 1883.....\$237,391.03
The earnings of the 350 last freight line cars and 50 coal cars bought in 1881 were last year \$16,919 in excess of the cost of repairs and the interest on the certificates issued for their purchase.

The report says: "The report of the previous year advised the purchase of 2,500 tons steel rails, which have been received and laid in the track, thus making our line continuous steel from Bridgeport to Pittsfield."

"There has been expended for equipment, permanent improvement and repairs other than ordinary, as follows: Steel rails, \$61,366; new passenger stations, \$17,630; iron bridge and new buildings, \$19,575; land, \$2,725; two new locomotives (less amount received for three old ones sold), \$12,085; two new drawing-room cars, \$15,220; total, \$128,601."

"The condition of your property, road-bed and equipment is first-class in every respect, and the amount necessary to be expended for permanent improvements will be much less for some time to come."

St. Louis, Vandalia & Terre Haute.

This company own a line from East St. Louis, Ill., to the Indiana State line near Terre Haute, 158.3 miles, with 41.7 miles of sidings. The road is leased to and worked by the Terre Haute & Indianapolis Co., but the lessor company makes its own report, covering the year ending Oct. 31.

The equipment consists of 41 locomotives; 14 passenger, 7 baggage and 2 express cars; 825 box, 307 stock, 100 flat, 257 coal and 22 caboose cars; 4 wrecking and tool cars, 10 rack and 89 gravel cars.

The general account is as follows:

Common stock.....	\$2,383,015.70
Preferred stock.....	1,544,700.00
Funded debt.....	4,499,000.00
Accounts and balances.....	110,837.73
Income account.....	146,656.92
Total.....	\$8,684,210.25
Road and equipment.....	\$8,338,439.08
Due by lessee, rent account.....	342,076.08
Due by Clark County.....	550.50
Cash.....	3,144.77
Total.....	\$8,684,210.35

The funded debt consists of \$1,899,000 first-mortgage

bonds and \$2,600,000 second-mortgage bonds, all bearing 7 per cent. interest, the yearly charge being \$314,980.

The traffic for the year was as follows:

Train-miles:	1882-83.	1881-82.	Inc. or Dec.	P. c.
Passenger.....	409,820	437,501	D.	27,672
Freight.....	457,103	930,386	I.	26,717
Other.....	138,570	82,135	I.	36,435
Total.....	1,505,502	1,450,012	I.	55,490
Passengers carried.....	316,963	303,680	I.	13,274
Passenger-miles.....	18,585,282	18,311,812	I.	273,470
Tons freight carried.....	1,191,033	1,126,799	I.	64,284
Ton-miles.....	11,810,481	115,982,845	D.	4,172,364
Av. train load:				
Passengers, No.....	45	42	I.	3
Freight, tons.....	117	125	D.	8
Average rate:				
Per pass.-mile.....	2.448	2.353	I.	0.095
Per ton-mile.....	0.206	0.217	I.	0.049
Per ton-mile.....	0.970	0.877	I.	0.102
Per ton-mile.....	0.174	0.190	D.	0.016

The earnings per train-mile last year were 124.4 cents; expenses, 95.5 cents, leaving the net earnings 28.9 cents. The coal tonnage was 378,118 tons, an increase of 50,934 tons, or 15.6 per cent over the previous year. The increase in traffic was entirely in local business. The average rate per ton-mile on through freight was 0.716 cent; on local, 2.385 cents.

The earnings for the year were as follows:

Freight.....	1882-83.	1881-82.	Inc. or Dec.	P. c.
Passenger.....	\$1,094,462	\$1,077,511	I.	\$16,951
Freight.....	454,987	430,863	I.	24,118
Mail and express.....	145,505	141,892	I.	3,613
Rents, etc.....	6,006	5,619	I.	387
Total.....	\$1,700,954	\$1,598,125	I.	\$102,829
Expenses.....	1,306,067	1,287,560	I.	118,507
Net earnings.....	\$394,887	\$310,565	D.	\$84,322
Gross earn. per mile.....	10.745	10.083	I.	662
Net earn. per mile.....	2.495	2.581	I.	86
Per cent. of expenses.....	76.70	74.40	I.	2.30

The expenses last year included improvements, renewals and betterments of road and equipment, the cost of which amounted to \$115,684.

The income account was as follows:

Rental (30 per cent. of gross earnings).....	\$510,286.22
Taxes and general expenses.....	\$42,980.95
Interest.....	\$14,930.00
Suspended taxes, 1873, 1874 and 1875.....	25,086.70
Surplus for the year.....	\$127,288.57
Surplus from previous year.....	19,368.35
Total surplus, Oct. 31, 1883.....	\$146,656.92

There is still about \$3,200 due on the suspended taxes, which will be paid during the current year. The actual working expenses for the year were \$1,306,067.12; the percentage (70 per cent.) allowed to the lessee amounted to \$1,190,687.84, showing a loss to the lessee of \$115,389.28, against a loss of \$70,272.25 for the preceding year.

There was a decrease in through freight owing to the operations of the pool, which diverted tonnage to other lines. On account of the maintenance of rates, however, the average receipts increased and the net earnings on freight were larger than in the preceding year. In like manner the through passenger rate increased and the passenger receipts were larger, although there was a small decrease in the number of through passengers.

During the year 84.28 miles of track were relaid with steel rails and 69,459 new ties were used. There are now 138.41 miles of the main track laid with steel, leaving only 19.89 miles of iron. There were 38.79 miles ballasted with broken stone or gravel, leaving only 6 miles to be ballasted. Two locomotives, one postal and two passenger cars were added to the equipment, and two more locomotives were ordered. There were 1.442 miles of new sidings added.

Philadelphia, Wilmington & Baltimore.

For the year ending Oct. 31, 1883, which is covered by the 46th annual report, this company worked the following lines:

	Miles.
Maryland Division, Philadelphia to Baltimore.....	94.99
Southwark Branch in Philadelphia.....	1.37
Newark & Delaware City Branch.....	11.79
Wilmington to Delaware Junction.....	12.16

Total P. W. & B. proper.....120.31
Central Div., Phila. & Baltimore Central R. R.:
West Philadelphia to Octorara Junction.....62.59
Junction to West Chester.....9.40
Chester Creek Branch.....7.14

Delaware R. R., Delaware Junction to Delmar.....83.83
Townsend Branch.....9.15
Clayton Branch.....1.27
Seaford Branch.....5.72

Queen Anne & Kent, Townsend Branch to Centerville, Md. 25.86
Delaware & Chesapeake, Clayton, Del., to Oxford, Md. 54.60
Cambridge & Seaford, Del. line to Cambridge, Md. 27.25

Total.....407.12

The company also owns a branch from Perryville, Md., to Port Deposit, which is leased to the Columbia & Port Deposit Co. The addition to the mileage last year was the Cambridge & Seaford road, which worked only from June 1, 1883.

The Philadelphia & Baltimore Central road is owned through ownership of the entire stock; it includes the former West Chester & Philadelphia road. The Delaware road is leased (this company also owning a majority of the stock) for 30 per cent. of the gross earnings. The Queen Anne & Kent road is controlled and operated, this company owning a majority of the stock. The Dorchester & Delaware and the Cambridge & Seaford roads are owned through ownership of their entire stock.

The equipment consists of 128 locomotives; 189 passenger, 37 baggage and 20 express cars; 955 box, 56 stock, 589 gondola, and 86 caboose cars; 287 service cars, including hand cars.

The general account is as follows, condensed:

Stock.....	\$11,794,850.00
Funded debt.....	3,726,418.68
Accounts and balances payable.....	628,406.09
Profit and loss.....	1,508,702.65
Total.....	\$17,658,375.40
Road and property.....	\$14,164,365.67
Stocks and bonds.....	1,990,320.82
Sinking funds.....	188,000.00
Fuel and materials.....	323,805.79
Accounts and balances receivable.....	370,067.01
Cash.....	619,796.11
Total.....	\$17,658,375.40

The funded debt consists of \$31,500 convertible bonds; \$2,600,000 plain 6 per cent. bonds; \$1,000,000 plain 5 per cent. bonds; \$134,916.66 mortgages and ground rents and \$60,000 ten-year notes. There was no change during the year in this debt.

The traffic for the entire line was as follows:

Train miles:	1882-83.	1881-83.	Inc. or Dec.	P. c.
Passenger.....	2,049,231	1,903,190	I.	146,041
Freight.....	1,823,635	1,664,396	I.	159,239
Service.....	63,090	64,908	D.	1,818
Total.....	3,935,956	3,632,554	I.	303,382
Pass. car miles.....	9,275,374	8,805,212	I.	470,162
Freight car miles.....	20,409,056	18,612,219	I.	3,796,837
Passengers carried.....	4,612,243	4,544,053	I.	68,190
Passenger-miles.....	111,634,453	111,260,315	I.	374,138
Tons freight carried.....	2,024,227	1,703,215	I.	321,012
Ton miles.....	111,977,216	93,093,380	I.	18,881,935
Av. train load:				
Passengers, No.....	54	59	D.	4
Freight, tons.....	61	56	I.	5
Av. receipt:				
Per pass.-mile.....	2.441	2.395	I.	0.046
Per ton-mile.....	0.659	0.636	I.	0.023
Per ton-mile.....	2.312	2.482	D.	0.170
Per ton-mile.....	0.457	0.634	D.	0.177

Of the freight car mileage 69.5 per cent. was of loaded cars. The average cost of locomotive service was 18.96 cents per mile. The average consumption of coal was 11.2 pounds per passenger car mile, and 4.2 pounds per freight car mile.

The fruit traffic from Delaware and the Eastern Shore was as follows:

Car loads peaches.....	1882-83.	1881-82.	1880-81.	1879-80.
" berries.....	3,344	5,182	78	3,417
" cherries.....	999	1,034	839	509
Weight in tons.....	34,748	49,738	7,333	31,406
Total revenue.....	\$216,472	\$202,574	\$50,315	\$159,876
Proportion main line.....	98,426	146,136	21,437	99,111
Delaware R. R. branches.....	101,636	130,436	28,878	60,765
branches.....	16,410	16,012		

The berry traffic has its fluctuations, but on the whole is much steadier than the peach traffic, which varies widely with the season. The berry shipments began in 1868 with 20 car-loads, and have shown a pretty steady increase, with only occasional set-backs from a bad season. Peach shipments were almost at their lowest in 1881, when but 78 car-loads were carried, although in 1868 but 23 car-loads were reported. The largest shipments were in 1875, when 9,072 car-loads were carried, a point which has never been reached since that year. The nearest approach to it was in 1882, with 5,182 car-loads.

The earnings for the year were as follows:

Passengers.....	1882-83.	1881-82.	Inc. or Dec.	P. c.
Freight.....	\$2,795,989	\$2,757,712	I.	\$37,987
Freight.....	2,641,805	2,398,438	I.	243,367
Mail and express.....	266,145	256,230	I.	9,915
Rents.....	38,023	15,712	I.	22,311
Total.....	\$5,741,672	\$5,432,092	I.	\$313,580
Expenses.....	4,065,775	3,676,494	I.	389,281
Net earnings.....	\$1,675,897	\$1,755,598	D.	\$75,701
Gross earn. per mile.....	14.085	14.139	I.	546
Net.....	4.286	4.562	D.	276
Per cent. of exps.....	70.81	67.73	I.	3.08

This road is one of the very few important lines in this country on which the passenger earnings exceed those from freight. The excess was less last year than ever before.

The earnings of the several divisions last year were as follows:

	Earnings.	Expenses.	Net earnings.	P. c. of exps.
P. W. & B. and branches.....	\$4,324,832	\$2,870,864	\$1,453,968	64.4
Central Division.....	693,403	592,456	100,947	85.4
Delaware R. R. branches.....	614,607	442,090	172,517	71.9
Queen Anne & Kent.....	28,639	47,808	19,169	166.9
Del. & Chesapeake.....	70,837	92,556	21,719	130.7
Cambridge & Seaford.....	9,354	20,001	10,647	213.8
Total.....	\$5,741,672	\$4,065,775	\$1,675,897	70.8

* Deficit.

The Cambridge & Seaford earnings are for five months only, from June 1, 1883. The earnings of the Philadelphia, Wilmington & Baltimore proper were last year \$35,947 gross and \$12,085 net per mile of road.

The income and profit and loss accounts were as follows:

Net earnings, as above.....	\$1,675,896.99
Profit from Delaware lease.....	54,015.54
Interest, etc.....	55,332.49
Total.....	\$1,785,245.02

Interest.....	\$224,821.57
Rentals.....	285,328.82
State taxes on capital stock.....	46,234.68
Advances to operated lines.....	34,235.00
Purchase of real estate.....	102,854.30
Dividends, 8 per cent.....	943,604.00
Total.....	1,639,078.37

Balance to profit and loss.....\$146,166.65
Balance, Nov. 1, 1882.....1,465,585.49
Sundry accounts transferred.....43,481.25